JAN. 23 1959

PETROLEUM WEEK

A McGRAW-HILL PUBLICATION

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Price 50 Cents

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That's the report of refineries now using "Ethyl" Antioxidant 733. Ortho-alkylation—a unique Ethyl development—makes possible this effective, low-cost, ashless antioxidant for motor gasolines, jet fuels and industrial oils.

733 is a safe and easy-to-handle liquid. It is particularly effective in providing storage stability for today's—and tomorrow's—higher octane fuels. Now available in commercial quantities.

Want more information on this new member of our growing "Ethyl" antioxidant family? Your Ethyl Representative will be glad to show you how 733's efficiency and economy can result in lower costs for you. Ask him today.

ETHYL CORPORATION

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The SS Edward L. Steiniger, named for Sinclair's president, speeds out for another cargo.

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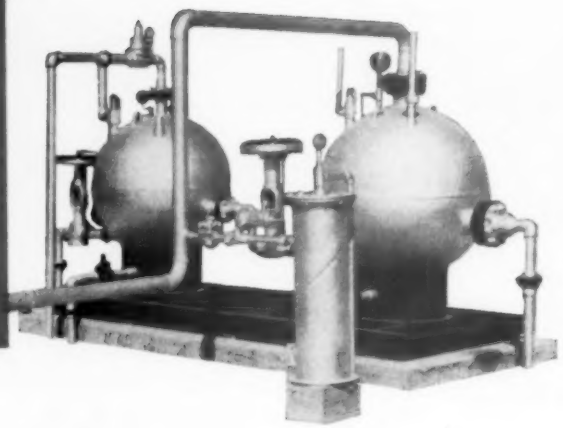
MID-CONTINENT NEWS



Increase production with Delta Spherical Separators:

Separation of gas is facilitated by forcing thin films of liquid over the surface area. A sphere gives more volume per unit surface area of enclosure wall than any other geometrical shape. At the same time, its structural shape allows thinner walls to hold a given pressure, thus making them lighter and requiring less foundation.

Delta Tank Manufacturing Co., Inc. offers single stage, two stage, or three stage spherical separators for production unit set-ups.

Highest capacity and efficiency in the industry based on both laboratory and field tests, Delta Spherical Separators have been proven and accepted by most major oil companies. Delta high pressure spherical separators range from 2.0 to 100.0 gas capacity MMSCFD, and low pressure separators range from 1.0 to 20.0 gas capacity MMSCFD. They are available with working pressures from 125 to 2000 psig.

Delta Spherical Separators with Delta meters can easily be used in connection with L.A.C.T. units.

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...Special split inlet flow diverter eliminates "swirling" troubles of single tangential inlets.

...Large oil-gas interface area facilitates escape of entrained gas.

...Stainless steel wire mesh mist extractor for maximum efficiency in removal of fine liquid particles.

...Safety by-pass protects against damage to the mist extractor when parafin or hydrates occur.

...Installation and service simplified because of size and weight.

...Special spherical separators designed for unusual applications.

For complete information, write to Mid-Continent Supply, exclusive world wide distributor, or contact your Mid-Continent representative.

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NATIONAL PETROLEUM NEWS — PLATT'S OILGRAM NEWS AND PRICE SERVICES

A McGRAW-HILL PUBLICATION

PETROLEUM WEEK — Number of copies of this issue printed: 48,570 — **January 23, 1959** — **Vol. 8, No. 4**

Published weekly by McGraw-Hill Publishing Co., Inc. James H. McGraw (1860-1948), founder. Publication office: 871 N. Franklin St., Chicago 10, Ill. See panel below for directions regarding subscriptions or change of address.

Executive, Editorial, Circulation and Advertising offices: 330 W. 42nd St., New York 36, N. Y. Donald C. McGraw, President; Joseph A. Gerardi, Executive Vice President; L. Keith Goodrich, Vice President and Treasurer; John J. Cooke, Secretary. Officers of the Publications Division: Nelson L. Bond, President; Harry L. Waddell, Senior Vice President; Ralph B. Smith, Vice President and Editorial Director; Joseph H. Allen, Vice President and Director of Advertising Sales; A. R. Venezian, Vice President and Circulation Coordinator.

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INSIDE *Slant*

ANOTHER IMPORT FLOOD DUE

Look for another flood of imports into the U.S. as the Feb. 28 deadline nears on the current voluntary control plan.

If you don't think that imports can go higher, take a look at what happened near the close of 1958, before the voluntary plan was extended for two more months.

In October, when reports were circulating on various types of import plans, the average was 1,564,000 b/d. But as the talk turned toward mandatory controls, the level began to rise.

The average for November was 1,712,000 b/d. And then the flood came. The level hit 1,907,000 b/d for the week ended Dec. 19; 2,015,000 b/d for the week ended Dec. 26, and 2,242,000 b/d for the week ended Jan. 2, 1959.

Much of the increase was in products, which hit a record level of 1,049,000 b/d for the week ended Jan. 9.

To achieve that high level of imports, the companies virtually drained Venezuela dry.

And there's little doubt but what they'll import as much as possible before any new plan is put into effect.

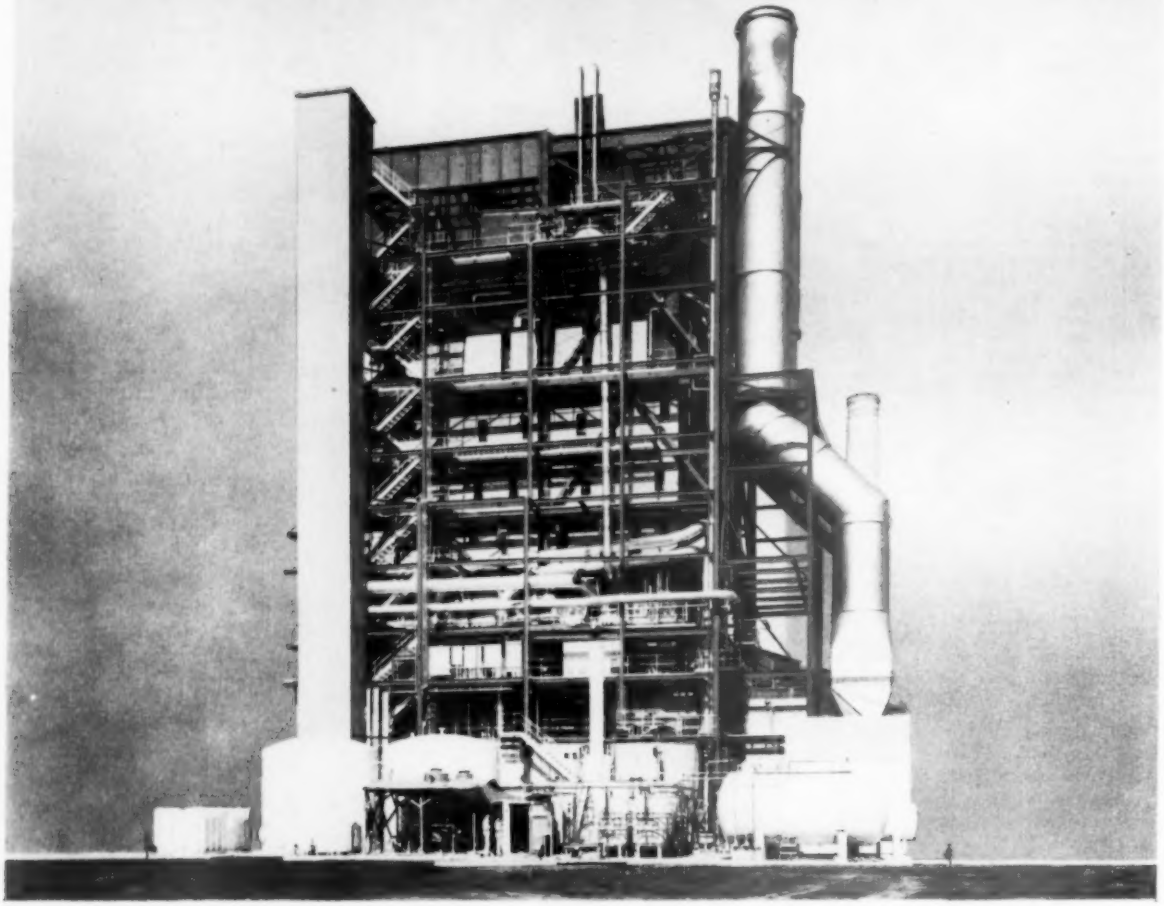
It's obvious that products must be included to make any new plan effective.

LeRoy Menzing
EDITOR

MEMO To: CORROSIVE ENGINEERS

From: AVONDALE (AVONCRAFT DIVISION)

Subject: VERSATILITY AND PORCELAIN ENAMEL



A case in point . . . porcelain enamel was used extensively in this Louisiana Power & Light Company boiler at Sterlington, La., to thoroughly weather proof it from top to bottom. The roof is of porcelain enamel, the entire sides are generally encased with this same material, and porcelain is worked into the curvatures of the pre-heaters and stack uptakes.

Our point is . . . porcelain enamel is extremely versatile for industrial applications of all kinds. It is engineered to your purpose, prefabricated and porcelainized at our plant eliminating fitting in the field which would produce raw edges subject to rusting. Other plus factors include: color, no periodic painting or replacing, durability.

Write today for our new brochure illustrating the many uses of AVONCRAFT porcelain enamel.

Avoncraft
a division of
AVONDALE

MARINE WAYS, INC.
VERSATILE BUILDER ON THE MISSISSIPPI
P. O. BOX 1030 • PHONE UNiversity 6-4561 • NEW ORLEANS 8, U. S. A.

DEPT/Opinions

Views That Make News . . .

"It is a contradiction to encourage production by tax subsidy while controlling price and production through proration laws and import restrictions . . .

"I enjoy the fruits of depletion and drilling chargeoffs, and I know whereof I write. I would continue to drill without such a large depletion allowance and I know the oil industry would too, in spite of their protests that they wouldn't."

—JACK COUGHLIN
Executive vice-president
Westland Oil
Minot, N. D.

"We are going to be very aggressive in acquiring additional reserves in California. We are optimistic about the future of California petroleum, for we think the current depressed condition is temporary."

—LIONEL GILLY
Financial vice-president
Producing Properties, Inc.

• (Editor's note: Last summer, Producing Properties bought 99 wells in the Wilmington field, and later acquired Oceanic Oil Co.)

"Today's modern process industries, such as the complex, continuous processes in petroleum refining and chemical manufacturing, require better, faster, more accurate, and more versatile control systems.

"It is in these areas that advanced forms of computing devices, such as digital computers, will come in to use."

—HENRY F. DEVER
Vice-president
Minneapolis-Honeywell Regulator Co.

"We are not predicting a boom [in the oilfield supply industry] for 1959, but several factors appear to favor a decided improvement from 1958 . . .

"There is a return to the practice of purchasing for current operations, which was started in October and increased steadily . . .

"During 1958, it was the practice of drilling contractors to rob drill pipe, engines, and other operables from idle drilling rigs rather than buy new items . . . This practice has its limitations, and many more new single units and machinery will, undoubtedly, be purchased during 1959.

"Machinery manufacturers have offset the domestic low ebb of consumption by shipping to export markets because foreign exploratory drilling has not been reduced to the degree that it has been in the case of the domestic industry."

—RAINEY ELLIOTT
President
Jones & Laughlin Supply Division.

. . . and Letters

Dear Sir:

The Bureau of Mines at the oil shale conference made the statement that oil shale could be put in the tanks at $1 a bbl. Jointly with AEC, it asked the industry to put up $1.2-million. The industry was not responsive.

They have their reasons, but that will not delay the oil shale experiment. If industry does not, the United States government will. An oil shale industry could be 20 years off, but the U.S. government deemed it otherwise.

It's a simple matter of whether we want to take in 3-million bbl. a day from overseas to be cut off in event of war, or do we want to take it from domestic oil shales?

I do not seek to halt or hasten the coming of oil shale. It will develop of its own value. I have a personal interest, but that does not detract from what I say if what I say is true . . ."

ROD P. DIXON
Attorney
Salt Lake City

Dear Sir:

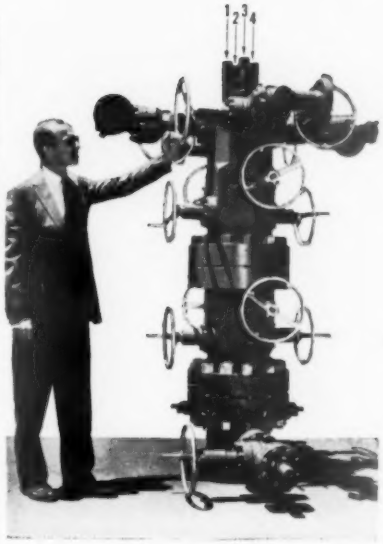
Reference is made to your editorial on the antitrust steps being taken by our government against the oil industry[PW—Dec.12'58,p64].

Oil, because it has the sound of money and empire, is forever under attack by any pressure group that wants to curry favor with the anti-big-business clique.

There is something schizophrenic about persecuting a most competitive industry . . .

JOAN KENT
Petroleum Equities Corp.
New York, N. Y.

PETROLEUM WEEK *will publish reader comments each week. Address letters to LeRoy Menzing, Editor,* PETROLEUM WEEK, *330 W. 42nd St., New York 36, N. Y.*



4 OIL WELLS IN ONE HOLE

The fortunate circumstance of 4 producing sands in one well means more today than ever before. The reason is Cameron's new quadruple completion equipment – the first of its kind. This equipment, which is already in service, includes all of the time tested features of the other highly successful Cameron multiple completions, plus a new unitized Christmas tree. Production strings may be run or pulled independently. The 4 segmented tubing hangers provide maximum clearance for running special tools. Each hanger segment will support full joint strength loads. There are triple seals for safety and positive orientation of hangers. Cameron's reliable back pressure valves afford complete control of well pressure through every phase of setting.

In this design only the size of the casing limits the number of parallel strings that may be hung. So with 1, 2, 3, 4 or even more pay zones, you may COUNT ON CAMERON for multiple production and multiple profits.

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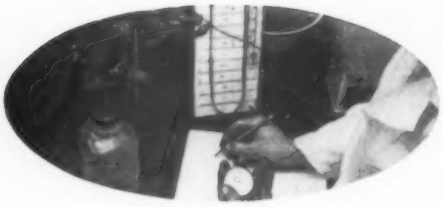


A look at today...and a glimpse

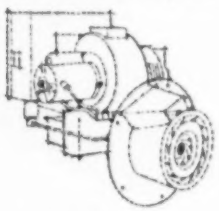
Armour Chemicals for Refined Products

Where they work today

Fuel oils—gasolines—asphalts. Every major area in refining can profit from Armour Chemicals. There is a variety of economical, oil soluble, cationic chemicals for each special job. Some function as additives for direct use in finished products; others are ideal as corrosion inhibitors during processing; still others perform as versatile chemical intermediates in the making of new products.

Fuel Oil Additives

The Armolads® are Armour's series of special furnace oil additives. They have been proved efficient at costs of less than 1¢/bbl.—making them the most economical fuel oil additives now being offered refineries.



All the Armolads are ashless additives. They are of the inhibitor-dispersant type and will impart corrosion inhibiting properties.

Armolads are fatty amine derivatives and are 100% active. It has been proven that the Armolads will effectively stabilize oil against insoluble gum formation and color degradation, and improve filterability without promoting emulsions in furnace oils from various crude sources.

Physical characteristics

	Pour Point	Specific Gravity
Armolad F22	28°F	0.857 at 79°F
Armolad F24	64°F	0.856 at 79°F
Armolad F25	62°F	0.835 at 84°F
Armolad F26	38°F	0.822 at 79°F
Armolad F28	52°F	0.840 at 79°F
Armolad F20	Melt Pt (approx) 115°F	0.797 at 138°F

Comparison tests (Mid-East stock)

	12 months ambient storage Mg/liter	DuPont's 13 week test Mg/liter	UltraViolet light test Mg/liter
Control	134	36.0	64.5
Armolad F22	68	4.0	20.5
Armolad F20	74	4.0	23.5
Competitor M	139	102.5	23.5

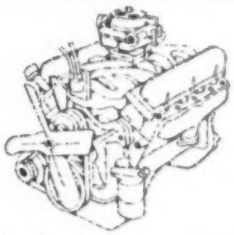
All crude stocks—Mid-Continent, Mid-East, West Texas, and Venezuelan—can be improved by one of the Armolads.

Armour will recommend a specific Armolad for the crude oil you're processing and help you determine the optimum concentration needed to do a satisfactory job economically.

For more information on the entire series of Armolads, check "A" in the coupon.

Gasolines

Armour Chemical offers refiners several chemicals that have found wide acceptance as gasoline additives. Both the Armeens® and Duomeens® are used as anti-stalling additives.



The Armeens . . . $R(NH_2)$—are high molecular weight aliphatic amines. They are cationic surface active agents and have the ability to change surfaces from hydrophilic to hydrophobic.

The Duomeens . . . $R(NH)CH_2CH_2CH_2(NH_2)$ . . . are Armour's series of N-alkyl trimethylene diamines. They are prepared according to the following reaction:

$$RNH_2 + CH_2{=}CH_2\ C{\equiv}N \xrightarrow{H_2} RNHCH_2CH_2CH_2NH_2$$

The Armeens and Duomeens are excellent corrosion inhibitors. Both can be reacted with various organic or inorganic acids to give you additional versatile additives which will impart the following characteristics: (1) excellent detergency, (2) improved thermal stability, (3) increased lubricity.

For more information on the Armeens and Duomeens as they are applied in refinery applications, check "B" in the coupon.

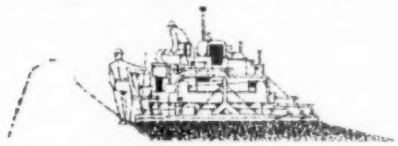
Asphalts

If you have an additive requirement when marketing asphalt, it will profit you to know more about the Redicotes® and Duomeen T. Armour's chemicals for this area of refining are designed to help you make treated asphalt that will pass difficult state stripping tests. They're effective at concentrations as low as 0.2%. Even at such a low concentration they im-

# of tomorrow

from Armour Chemical

prove adhesion of asphalt to damp or wet aggregates, permitting contractors and highway departments—your customers—to extend their paving season.



Many asphalt plants and refineries are using Duomeen T or Ethoduomeen T/13 as a starting material for making their own asphalt adhesion agents. Let Armour's technical staff assist you in formulating your own anti-stripping additive.

Chemical-physical properties of Redicotes

(Salts of Polyamines derived from tallow)

Redicote	Pour Point	Typical SSF Viscosity	Typical Sp. Gr. @ 20°C	Per Cent Active
76	120°F	25 (@ 140°F)	0.859	100
77	110°F	45 (@ 122°F)	0.875	100
79-S	105°F	40 (@ 122°F)	0.894	100
80-S	60°F	127 (@ 122°F)	0.940	100

For additional data, check "C" in the coupon.

Where Armour Chemicals for refineries will work tomorrow

In fuel oils. More efficient dispersants and stabilizers for the heavier fuel oils are being developed by Armour for the refining industry. Results have been encouraging and will be announced in the near future.

In gasolines. Armour is currently developing new poly-functional materials to make gasoline engines run cleaner. Work is progressing with additives to improve engine performance all year-round.

In emulsion-grade asphalts. Armour will have information available on cationic emulsifiers that are insensitive to hard water; that promote better adhesion on all types of aggregate; and that can be used at economical concentrations with asphalt from any crude source. Other new outlets are also being studied in asphalt-based paints, roofing, caulking compounds, adhesives, mastics and insulations.

Find out how Armour's chemicals for refineries can work for you. Our chemical specialists will help you utilize the right additive or basic chemical for your products or special situation. Write or call Armour today.

NEWS NOTES

London, England. A new, improved corrosion inhibitor has been developed for application in both refinery streams and in metal working oils. The inhibitor is formed by reacting an Armour diamine with wool grease olein.

•

Hamburg, Germany. Difficult performance specifications now required by a growing economy have been met by incorporating an Armour amine into crankcase lubricants and an Armour diamine into diesel oils.

•

Cleveland. Increased die life, cleaner surfaces, the elimination of breaks, and the stopping of chattering is being accomplished by oil soluble diamine salts at one of the large tube manufacturers in this area.

•

Wilmington, South Carolina. Within the past month, new asphalt test roads have been laid here from finely dispersed, stable cationic emulsions. The emulsions were prepared with Armour's cationic surfactants.

•

San Francisco. Drum corrosion is being effectively combatted by an Armour diamine at concentrations of ½ to 1% in a product consisting of phenolic and chlorinated chemical dissolved in kerosene.

How can Armour Chemicals help you?

Check here for more information on your field of interest. ☐ A ☐ B ☐ C PW-1-59

Send sample and more information for this application:

NAME _____

POSITION _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____

Leader In Progressive Fatty Acid Chemistry

ARMOUR CHEMICAL DIVISION

1355 West 31st Street · Chicago 9, Illinois

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Good Wells Make Good News

A Monthly Report on Wells That Are Now Worth More

January 23, 1959

Acidizing is frequently an efficient way to stimulate production from low solubility sands. Here are four recent treatments of this type by Dowell:

- **Carbon County, Wyoming** (New Oil Well) Perforations into Tensleep sandstone were from 6900 to 7000 feet. This formation exhibited about 30 per cent Mud Acid solubility. Initial production was 492 bopd through ¼-inch choke, so fracturing was not necessary. However, operator wanted to clean up bore hole, so Dowell injected a 500-gallon spearhead of Mud Acid. Then 1500 gallons of acid with surface tension reducing, demulsifying and silicate control agents completed the treatment. After clean-up, production stabilized at 1100 bopd through ¼-inch choke. The $1366.00 treatment was paid out in less than two days.

- **Avoyelles Parish, Louisiana** (Old Oil Well) This well was originally completed in the Sparta sand. Production had gradually declined to 30 bopd even though the well had been acidized several times. Dowell recommended Mud Acid to dissolve and disperse any silt that might be plugging perforations. When the well could not be loaded with oil, 25 ball sealers were dropped into the tubing to seal off the thief zone. Then 500 gallons of Mud Acid was pumped into the well, followed by 38 more ball sealers and another 500 gallons Mud Acid. Pressure increases after each injection of balls indicated that additional perforations were being reached. After treatment, production stabilized at 55 bopd. The entire treatment cost of $828.00 was paid out in eight days.

- **Hughes County, Oklahoma** (Old Oil Well) Original completion in 1924 was by nitro-shooting in the open hole. Pay is the tightly-cemented calcareous sand of the Union Valley Cromwell formation which usually responds well to acid. Dowell treated the well with two 3000-gallon stages of regular acid. A temporary plugging agent was injected between the two stages to plug off the most permeable zone. After clean-up, production stabilized at 40 bopd.

- **Hidalgo County, South Texas** (New Gas Well) This well was completed through perforations in the shaly Frio sand. Operator suspected that mud damage to formation was limiting flowing pressure. Dowell recommended acidizing with 1000 gallons super Mud Acid. After treatment, well head pressure rose from 500 to 1500 psi through ¼-inch choke. A planned fracturing treatment was considered unnecessary in view of the excellent results obtained with Mud Acid.

Dowell has the experience, the men and the chemicals needed to acidize your well successfully. For prompt service, call any of the 165 Dowell service points. In Canada, call Dowell of Canada, Ltd.; in Venezuela, United Oilwell Service. Dowell, Tulsa 1, Oklahoma.

Services for the oil industry DOWELL
DIVISION OF THE DOW CHEMICAL COMPANY

60-Second Summary / WHAT'S HAPPENING IN OIL

January 23, 1959

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A 5% hike appears to be the oil wage pattern this year. This raises a problem for oil firms: How to offset this added cost. . . . p. 15

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The Texas Railroad Commission's authority over buyers and transporters of crude should be tightened, a study group reports, to cope with "anticompetitive" practices of importers. . . . p. 19

•

Opposition is mounting to the proposed 1.5¢-a-gal. hike in the federal gasoline tax. But the alternative appears to be deficit spending by the government. . . . p. 22

•

A supplier can't help his retail outlets in a price fight. That appears to be the impact of a ruling by the Federal Trade Commission in a price-discrimination and price-fixing case against Sun Oil Co. in Jacksonville, Fla. . . . p. 16

•

Geochemical exploration is getting a close re-examination. Its value is often debated, but now a leading geophysical firm plans a chemical exploration service. . . . p. 25

•

Epoxy resins, which hit a 40-million-lb.-a-year pace in six years, may expand tenfold by 1961. The growth will hike demand for petrochemical raw materials. . . . p. 95

•

Some producers abroad believe the term "Middle East" is synonymous with "problems." And the latter are about equivalent to "setting up shop on the moon." . . . p. 17

•

Rubberized asphalt coating of offshore lines promises to increase. The material offers high corrosion resistance, flexibility, and the needed "anchoring" weight. . . . p. 98

•

SPECIAL READER SERVICE

The two best chances for oil men to catch up with the rush of oil technology are coming this spring—the International Petroleum Exposition in Tulsa and the World Petroleum Congress in New York. A preview gives full details. . . . p. 44

•

Texas's share of total U.S. crude output dropped to a new low of 38.4% in 1958, nearly three points under 1957. . . . p. 20

•

Argentine crude may enter world markets if the nation reaches self-sufficiency under its development contracts. At least, that is indicated in the Esso pact. . . . p. 103

Up to the Minute / SIGNIFICANT LATE NEWS

AT-A-GLANCE Copyright PETROLEUM WEEK

January 23, 1959

Note this harbinger: The first action by the New York Legislature this year was to hike the gasoline tax 2¢, boosting the state levy to 6¢ a gal. With other legislatures assembling, you can expect similar tax moves in perhaps two dozen other revenue-short states. In some cases the increase is earmarked for road-building, but in others—as in New York—it goes into the general fund.

•

The Administration is having trouble designing a mandatory imports plan that will get Justice Dept. approval. Government antitrusters this week knocked down a committee plan for a mandatory program with 50% of imports allocated on a historic basis to established importers.

A modified mandatory plan is now being studied. It would avoid mention of a 50-50 division, but would seek to achieve somewhat the same result. The Justice Dept. hasn't voiced an opinion on this one yet.

•

There may be an A-bomb explosion in shale this summer. Earlier, the government had indicated it would not undertake another "Plowshare" test shot until an international agreement was reached in Geneva. But John A. McCone, chairman of the Atomic Energy Commission, said this week that "we are under no such injunction."

•

The 5% wage hike may spur automation, even in such segments as production, where there is little organized labor. Reason: The wage hike is generally being extended to include nonunion as well as union employees. With the resulting bigger payrolls, many firms will be alert to automation possibilities.

•

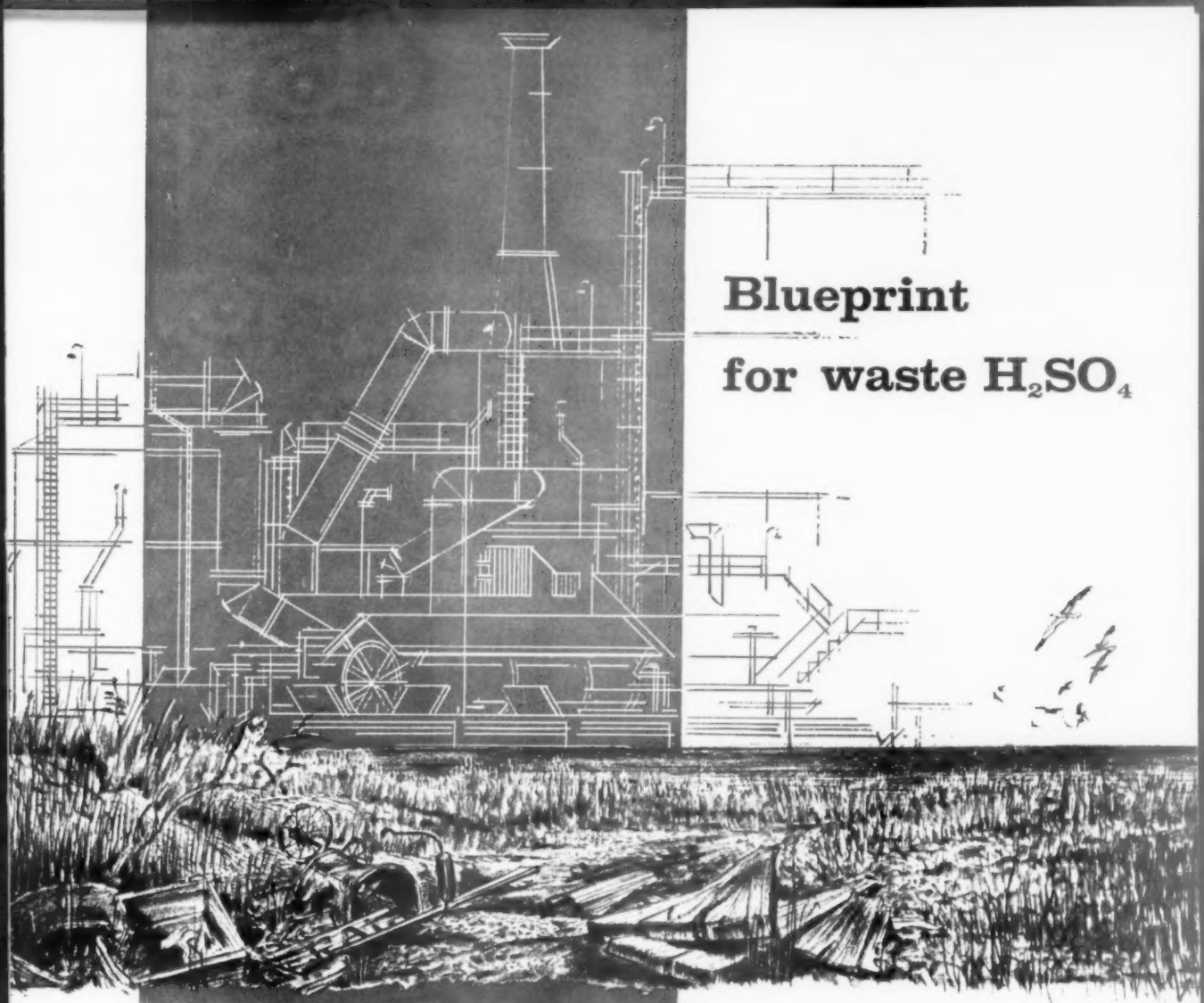
President Eisenhower is again calling for a helium conservation program. In a message to Congress, he pointed out that the helium content of natural gas is now being largely wasted, and urged enactment of legislation to prevent such waste. He said the gas is badly needed for government and private projects.

•

Three small refiners are trying to lease Gulf Coast tankage to fill with Venezuelan crude prior to Feb. 28. They say they will release the storage facilities during March. One has no import allocation under the voluntary plan due to expire at the end of February. Another is listed as a violator.

•

The plan of a U.S. firm to sell 12,000 tons of large-diameter pipe to Russia has been killed by the Commerce Dept. The firm's application for an export license was denied, the agency said, because the pipe involved was more than 24 in. in diameter. This size is specifically included in a "positive" list of items which are seldom approved for shipment to any Iron Curtain Country.



Blueprint for waste H_2SO_4

Dixon Chemical Industries, Inc. is now breaking ground at Paulsboro, New Jersey for one of the largest and most modern sulfuric acid decomposition plants in the world. This plant, specially designed to regenerate spent sulfuric acid will be the answer to the old problem of waste sulfuric acid. These facilities will be available to the large concentration of refineries in the heart of the Delaware Valley as well as other Eastern consumers having a waste acid problem.

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Philadelphia Area Office:
Cuthbert Rd., Merchantville, N. J.
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..... to make net savings of $4.87 per foot

Here's proof of actual savings using Bit Lube (E. P. Additive for Mud). The table below shows a drilling cost comparison in the Brownfield, Texas, area. The Bit Lube well was drilled for $4.87 per foot less than the offset well.

	NO. BITS	BIT SIZE	INTERVAL	ROTATING HOURS	WEIGHT ON BIT	RPM
BIT LUBE-WATER	28	7⅞"	4919-7272	185	70-90,000	60-80
WATER	40	7⅞"	4936-7270	379	45-60,000	55-60

Total savings in bits, trips, and drilling time was $13,420. Bit Lube and emulsifiers cost $1,940; a net saving of $11,480!

Bit Lube forms a tough protective film to reduce friction and to increase bit bearing life under extreme pressure conditions. It works best with high weight on the bit and fast rotary speed. Bit Lube and Magcobar engineering may be the answer to your bearing failures.

Bit Lube is only one of Magcobar's many answers to the problem of high drilling cost, a problem that demands the right answers. You'll find that the right products *used right* by Magcobar can cut costs on your next well, too.

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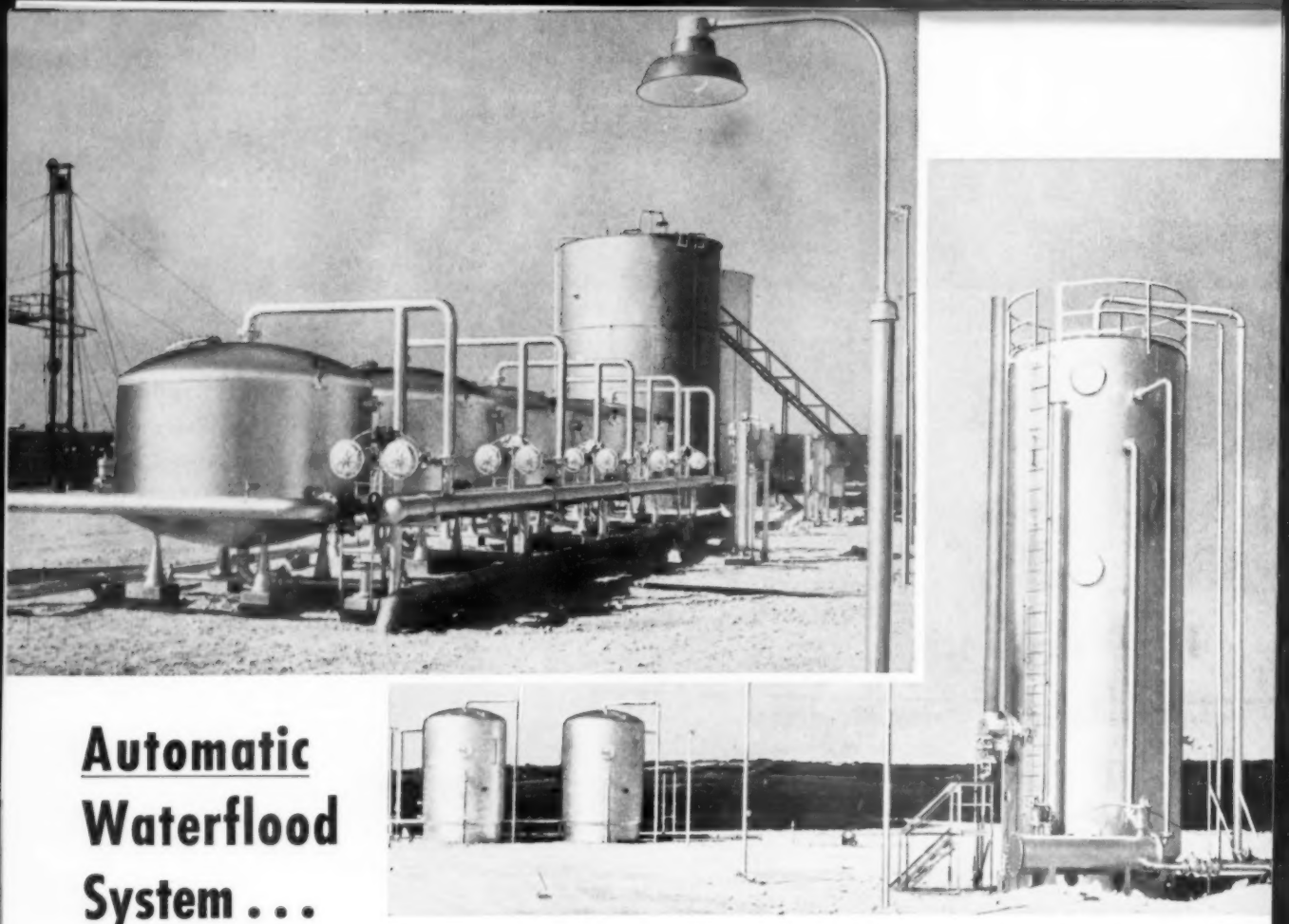

Automatic Waterflood System . . .

Utilizes BS&B AQUA-Kleener!® Filters, Oilfield Equipment and Controls

Down in Mid-Texas, there's a "young" waterflood just getting well started that operates on a completely *automatic* basis — with the aid of 5 BS&B AQUA-KLEENER Filters, 2 BS&B Free Water Knockouts, a BS&B Type S Treater, several BS&B Bolted Steel Tanks and numerous BS&B Controls. These include valve actuators, time clock controls, liquid level controls and pressure differential controls.

In this system, production water from the treater and the free water knockouts is combined with "source water" from 2 750-bbl. tanks (fed by 2 water wells), and is pumped through the filters to the injection pumps, and thence into several injection wells.

The 5 filters are controlled by a preset time clock on a cycle that keeps some of them on stream while others are on automatic backwash. The piping manifold on the filters and twin valves is so arranged that when the time clock closes the inlet valve, it opens the other valve starting the backwash cycle.

This installation is a good example of BS&B "Oilfield Automation" at work. Why not let your BS&B Man help you put your operations on an automated basis, too?

BS&B — OVER 60 YEARS — EFFICIENCY RELIABILITY — ANOTHER EXAMPLE OF PRODUCT LEADERSHIP

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Wage Hike Offers Avert Oil Strike

After demonstrating a bit of "brinksmanship," oil union and oil company representatives veered away from strikes and toward a pattern of 5%-wage-hike settlements this week.

The wage issue wasn't entirely settled at midweek. Where the 5% offer had been made, union members were still going through ratification procedures. And some companies had not yet made a wage-hike offer.

But the momentum toward settlements definitely was there, and most observers were confident that the wage issue was ended—at least for the time being.

The end to a major strike threat came with abrupt suddenness. Until last weekend, negotiations had been fruitless. For almost a year the unions had been seeking a wage hike—and had made no headway at all.

The biggest oil union, the Oil, Chemical & Atomic Workers Union, then took the lead in preparing to strike. The deadline it gave Sinclair was midnight of Jan. 17, and it was ready to strike other plants throughout the nation as well. Independent unions and union federations were getting into the act, too.

There seemed to be little doubt that union leaders were committed to strike action. And they had enough strength to close up, if they chose, more than half of the nation's refining capacity.

Then on the eve of the strike deadline, the companies began making their moves.

Sinclair, in a meeting with OCAW in Kansas City, made its first counter-offer: a 5% wage hike, which amounts to about 13.5¢ an hour for the average refinery worker.

Similar offers cropped up at other points on Friday.

Almost immediately, both company and union members sensed that the fight was over; that the unions would accept the offer.

Generally, in the past, settlements were reached after considerable jockeying by each side—with each yielding gradually until a settlement point was reached.

This time, all that ground was covered with one move—the 5% offer.

Neutral observers felt that neither side could claim a clear-cut victory. At the same time, neither suffered a real defeat.

Apparently company negotiators, convinced that the unions were ready to strike unless a settlement was reached quickly, arrived at this conclusion:

A 5% wage hike would be hard for the unions to reject. Yet it wasn't high enough to give the unions much to cheer about, and it wouldn't make heroes of the union negotiators.

If that was the company strategy, it worked. The unions appeared to be willing to go along with the settlement, but there was some grumbling from some of the more militant union members, particularly in the Gulf Coast region, who felt that the 5% hike wasn't enough.

Had the company offer been much lower than it was—perhaps if it had been any lower at all—it is doubtful that the unions would have accepted. As it was, they took the 5% rather than strike in an effort to get it pushed up slightly.

Even so, there may be another wage-hike effort by the unions before the year is over, although unions normally do their wage bargaining on an annual basis.

The principal factor making this situation different is that the last previous raise was in May, 1957—almost 19 months ago.

Some union members, irked at the failure to get wage-hike action during 1958, are said to feel that the unions shouldn't wait until next year to launch a new campaign.

Several contracts, including the master contract Sinclair has with OCAW, will be open again this summer. And most contracts have provisions for reopening on wages on six-month notice from the union.

Whether such a move does develop probably will depend on economic and other factors. If oil industry profits begin to rise substantially, the unions would be more likely to undertake a campaign.

For the companies, the 5% wage hike poses the problem of how to meet the resulting increase in labor costs.

Many companies, with Sinclair in the forefront, have been saying that there was no economic justification for a wage hike now.

Sinclair continued to hold this view even after it had made the 5% offer to the union.

It pointed out that it made the

IPAA Awaits Mandatory Plan

Independent producers expect the Administration's Cabinet committee to recommend mandatory controls for imported crude and petroleum products.

Gordon Simpson, president of the Independent Petroleum Assn. of America, said after a meeting of the IPAA executive committee in Washington, D. C., this week that he anticipates a substantial rollback in the total level of imports, particularly of products other than residual fuel oil.

"The necessity for early and effective action to limit oil imports is clear and demanding," Simpson said. "We expect that a plan to accomplish this will be forthcoming soon" from the Cabinet committee.

Simpson said the IPAA committee discussed possible congressional action on imports, but decided to hold up any efforts until the Administration acts.

On other problems, producers are "disturbed" by the President's proposal to increase the federal gasoline tax 1.5¢ a gal., Simpson said.

He said the proposed hike would mean that direct taxes to consumers would average about 10.5¢ in most states.

Simpson said that IPAA would continue to work for natural gas legislation to ease federal regulation of producers.

offer to prevent a strike that could cripple the company, the industry, and domestic industry in general, just at a time when economic headway was being made.

In the current setting, it felt that a wage hike could be absorbed more safely than the upsetting impact of a strike.

Just how much, if any, of the added labor cost can be offset by product price increases remains problematical.

Traditionally, the oil industry has been unable to translate wage hikes into price hikes immediately—as some industries do.

In most industries, such as steel and automobiles, wage increases are promptly added to consumer product prices.

But oil, on the other hand, has to consider what product price hikes would do to its competitive position with other forms of energy, as well as the competitive economic factors of supply and demand within the oil industry.

Heating oil, right now at a seasonal demand peak, has been increased in price several times in recent weeks, and the most recent advance in the Gulf Coast spot markets and on the East Coast met resistance. Even if heating oil prices are raised again, the big demand season will soon be over.

Gasoline is at a seasonal demand low, and the industry is faced with ample, if not surplus, stocks.

Oil Pricing Bill Talked in Oklahoma

Several oil bills may be proposed in Oklahoma, ranging from setting charges for trucking oil to "some form" of price legislation.

That indication was given the Oklahoma Independent Petroleum Assn. at its annual meeting this week by Ferrill Rogers, attorney for the Oklahoma Corporation Commission.

Other possible bills include legislation to allow the Corporation Commission more latitude in establishing well-spacing, a reduction in the number of exempt pools, and an increase in the state's percentage depletion provision to conform with the federal 27½%.

Paul R. Schultz, president of Blackwell Oil & Gas Co., Tulsa, was reelected president of the association. E. A. Smith, president of Service Drilling Co., Tulsa, was elected vice-president, and John J. Robertson, Shawnee producer, was reelected secretary-treasurer.

FTC Rule Hits Suppliers

When may a supplier legally go to the aid of a dealer? An FTC ruling, putting new restrictions on such action, may have a far-reaching impact on marketing practices.

Suppliers apparently are getting boxed in more and more on price moves they can make without running afoul of price-discrimination or price-fixing charges.

New evidence of this state of affairs cropped up last week. The Federal Trade Commission upheld an examiner's ruling that Sun Oil Co. acted illegally in granting one of its dealers in Jacksonville, Fla., a lower price than it offered other Sun dealers in that market area. Observers feel the ruling may have some wide repercussions.

A significant point of the FTC decision is this: It implies that when a supplier is not engaged in retailing, he cannot act to protect his retail outlets.

Clearly, the use of "good faith" as a defense against price-discrimination charges has now been restricted.

In the Sun case, Sun had cut its price to a specific dealer to help him meet competition from a nonmajor station across the street.

This, the company argued, was action taken in good faith to meet competition.

FTC ruled, however, that since it was an independent Sun dealer—and not Sun itself—that was facing competition, the supplier couldn't claim legally that it was cutting its price to meet competition.

For the "good faith" defense to apply, Sun would have to show that the competition was from another supplier.

Thus, FTC said, Sun wasn't meeting competition, but was, instead, discriminating against Sun's other dealers. That is, if it gave a price cut to one, it had to give the same cut to all in the same market area.

A big question—still unanswered by FTC—is just what constitutes a market area. Where can a supplier draw the boundary on a territory in which he wishes to make a price cut?

Conceivably, it could mean a city, a county, or even an entire region.

In order to meet a price situation at a given location, a supplier might be required to reduce prices to many dealers throughout a wide area. This, in turn, could start price wars in areas where none had existed.

The only other apparent solution would be for the supplier to ignore a dealer involved in a price fight—even though the dealer might be forced out of business.

Or, some observers point out, a supplier might switch to a commission-agent system so that he could make price adjustments without facing discrimination charges.

However, Sun tried this approach at Norfolk, Va., to compete with stations selling at government post exchanges. The result: It was charged by FTC with unfair competitive practices.

FTC has driven a further wedge between suppliers and dealers by its interpretation of what constitutes price-fixing.

In the Jacksonville case, the agency said the evidence indicated that the Sun dealer's price was actually set by agreement with Sun, and not by the dealer's independent action.

Sun, says FTC, determined what price the dealer would offer before it agreed to reduce the price to him.

Apparently, FTC feels that a supplier should not discuss the dealer's price with the dealer at all.

Suppliers insist that they must discuss prices with a dealer before granting an allowance, in order to be sure he does not intend to beat, rather than just meet, competition—and thus expose them to other unfair-pricing-practice charges.

FTC's "narrow interpretation" of the law will be challenged in the courts. Sun said immediately after the commission's verdict that it would appeal the case.

If FTC's approach is allowed to stand, it said, "we doubt the ability of any supplier to come to the aid of a dealer under any circumstance."

Sun said further:

"Competition at the retail level in the gasoline business is competitive for both the dealer and the supplier, and the supplier's competition is not limited to competition with another supplier as the commission contends in this case.

"Consequently, it seems to us that this decision brushes aside the realities of business competition.

"If it is not successfully countered, it will bring into the marketing relationships between suppliers and dealers an entirely new concept . . ."

THE WATER SHORTAGE is so great that water wells drilled in Arabia in connection with oil production even draw camel herders.

Mideast Operators Face Many Problems

When most U.S. oil men think of problems in the Middle East, they think of one: politics. Obviously, politics are troublesome, but the Mideast operator also worries over climate, supplies, and labor.

BIG INVENTORIES of supplies—from drilling bits to diapers—are needed in Midwest operations, since most areas are far from major sources of supply.

ROAD BUILDING and maintenance are needed to provide access to oil regions.

TRAINING local employees—such as these at Magwa, Kuwait—is a top job.

"It's like setting up shop on the moon." That's how one oil executive sums up the problems of starting oil operations in some of the remote areas of the Middle East.

And he continues: "Oil companies there are forced to start from scratch and pioneer, creating their own communications, roads, and living quarters. They must supply their own water, and carry their own equipment. And at the same time, they have to battle nature."

In some of the long-established spots, such as Basrah, Kuwait, Bahrain, Dhahran, and Abadan, oil men have already set up all facilities imaginable.

But go a few miles beyond these points, and you're back on the "moon."

It takes a lot to maintain these established operations, too. Only some 25% of Aramco's total employees, for instance, are actually connected with direct oil operations. The remaining 75% are needed to keep the 25% alive.

Aside from politics, which means you must be a diplomat as well as an oil man, these are some of the top problems of operating in the Middle East:

• **CLIMATE—Most oil companies operating here put climate near the top of their list of troublemakers.** It not only interferes with actual oil operations, but also provides headaches in general living conditions.

Summer temperatures in some areas are over 120F for months at a time. In the Persian Gulf, the blazing heat is accompanied by great humidity. Dust and sandstorms often interrupt field operations, too, and make top maintenance work mandatory.

The temperatures of the Gulf have been described in many different ways. "You go into the Persian Gulf for a swim in the summer," one oil man says, "and come out to cool off." Still another describes it as "swimming in a cup of hot consomme."

Air-conditioning has provided some relief, but—as still another operator points out—no one has yet thought of a way to air-condition oil fields.

• **COMMUNICATIONS—When a new company enters the Middle East, it finds communications are pretty poor—if they exist at all.** Most of the long-established companies have already set up their own intricate systems, and are now busy working on means of extending and improving them (PW—Oct.10'58, p13).

Kuwait Oil Co. and Arabian American, for instance, have both set up their own telephone systems.

Aramco is now extending its system and you can dial into the Dhahran network from Nariyah, about 125 mi. to the northwest.

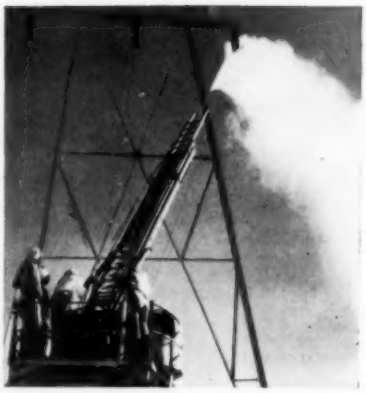
Aramco also has three radio systems: (1) a VHF, which is also used for a teletypewriter service; (2) a long-range unit, used to link towns, exploration parties, and temporary camps together; and (3) push-to-talk radios, for repair crews, pipeline riders, and gas-oil separation plant personnel.

• **TRANSPORTATION—Oil companies have done a lot to solve this problem by building their own roads.** But there are still troubles, even after the roads are completed.

"In some areas, you finish a road," says one oil man, "and then you drive out a week later, and you find a 200-ft. sand dune parked on the road. And if you decide to stay parked, you've got to build a detour around it."

Exploration teams usually have no roads at all, and aircraft are used to haul in everything: food, water, and movies—not to mention oil equipment.

Aramco says its off-road transportation—still relying heavily on soft-tire vehicles—is under continuous improvement in the trackless "Empty Quarter" of Saudi Arabia. For other areas, the company is working on improving European equipment for its transport fleet. "It's awfully hard to beat the American stuff, but a lot of Aramco's production is sold in Western Europe."



CORROSION creates a dangerous problem here: A 66,000-volt power line is hosed to remove moist sand, which could short the line.

• **CORROSION—Heat, humidity, and an alkaline atmosphere, wedded with an extremely saline Persian Gulf makes corrosion a problem.**

For corrosion control on its gas-injection facilities, Aramco is making "very effective" use of inhibitors, eliminating the use of dehydrators at its Abqaiq gas-injection plant.

The company also says corrosion can knock out a telephone line in three months.

Aramco uses cathodic protection on its buried pipelines, after finding that asphalt coatings and wrappings just weren't enough protection.

Cathodic protection is also used on offshore installations.

For the problem of pier corrosion, Aramco has finally settled on a system which, it says, will give "satisfactory protection for the first time."

The system involves using several different types of paint in different locations: above the splash zone, below it, and on the area that's constantly submerged.

• **HARBOR FACILITIES — It's been an if-you-want-them-build-them-yourself proposition for oil companies.**

Except for a few natural harbors, such as Kuwait's, the shallowness of the Persian Gulf makes building of harbor facilities complex. Oil companies often have to go far out in the Gulf to an island to build a pier; sometimes they have to build the island as well.

The Iranian Consortium, for instance, has gone out to Kharg Island, where it intends to complete a new deep-water oil-export terminal.

And Basrah Petroleum has slated plans to build its own island in the Gulf for its new terminal.

When the oil companies first entered the area, there were no deep-water berthing facilities. Even at Kuwait, which had a natural harbor to start with, the oil company had to build its own facilities to accommodate big ships when it found the jetty was accessible only to barges. It has now been built up to the world's biggest crude-loading port.

• **SUPPLIES—More airfields and better communications are beginning to help oil companies cut the tremendous size of their inventories.**

But the companies must still keep big stocks of spare parts and consumable materials—everything from drilling muds to diapers. The reason: The major sources of supply are far away—often halfway around the world.

A company must also have facilities to do work it could farm out at home.

As a result of the need for high stocks, the companies have built some stores, but their policy is one of "economic integration" with the local community as much as possible.

This means the oil companies try to order their equipment through local merchants. "It would sometimes be simpler for us to order our equipment direct," one oil man says. "But with our policy of trying to help develop the local communities, we have transferred a lot of our stock to local suppliers."

• **FRESH WATER—Except in Iraq and Iran, where oil companies can pipe water from rivers, water is an item "hard to come by."**

In Kuwait, where they have no water at all, sea-water is distilled.

In Saudi Arabia, there are wells only in some areas; in others, supplies have to be supplemented by sea-water distillation units. Aramco has installed a new-style flash evaporator for drinking water at its offshore Safaniya field. The unit was developed by the Navy for Forrestal-type carriers, and is the first used by an oil company in the Middle East, as far as Aramco knows.

• **LABOR—All established companies in the Middle East have set up some sort of training program to take care of the lack of trained local personnel.**

Aramco, for instance, gave basic training in job skills to about 1,000 Saudi employees per month, just in 1957 alone. And the company now has industrial training centers in Ras

Tanura, Abqaiq, and Dhahran. Kuwait Oil has also established technical schools on the high-school level.

• **COMMUNITY - PERSONNEL RELATIONS—Every area where oil is produced must be made habitable for personnel,** and oil companies have a proud list of credits in this direction.

They have built homes, community centers, schools, and hospitals, not only for supervisory personnel but for local employees as well. Aramco, for instance, has even set up a television station broadcasting in Arabic.

Many companies also provide home-ownership loans for employees.

Aramco is also helping local municipalities in planning the growth of natural communities in its area of operations. The company's Saudi employees generally prefer these communities to company-sponsored townsites.

The Mideast Lineup

The ranks of oil companies hunting for oil in the Middle East, where production is now topping 4.1-million b/d, are growing. In the year just ended, three more oil companies joined the hunt in the Persian Gulf, and others are eyeing the area.

Here's a list of the firms producing or exploring in the chief oil-interest areas of the Middle East today:

• **Kuwait**—Kuwait Oil Co. (Gulf, British Petroleum).

• **Saudi Arabia**—Arabian American Oil Co. (Jersey Standard, California Standard, Texaco, Socony).

• **Iran**—Iranian Oil Participants Ltd. (Royal Dutch Shell, BP, Cie. Francaise des Petroles, Jersey, Socal, Texaco, Gulf, Socony, and a host of U.S. independents); offshore: Pan American, Italy's Agip Mineraria.

Iraq—Iraq Petroleum Co. (Shell, BP, CFP, Jersey, Socony, and the Gulbenlkian interests).

Qatar—Qatar Petroleum Co. (same as IPC).

Trucial Coast states—Petroleum Development (Trucial Coast), Ltd. (same as IPC); offshore: Abu Dhabi Marine Areas, Ltd. (BP, CFP).

Neutral Zone—Getty Oil Co. and American Independent Oil Co. (a group of smaller U.S. companies, headed by Phillips Petroleum); offshore: Japan's Arabian Oil Co.

Bahrain—Bahrain Petroleum Co. (California Standard, Texaco).

Dhofar—Dhofar Cities Service Co. (Cities Service, Richfield).

Crude Production to Rise

Domestic crude output in February is expected to reach a 20-month high of close to 7.2-million b/d.

That's the indication, based on allowables set so far in the major producing states.

January's production is averaging a little over 7.1-million b/d, only the second month since May, 1957, that production has been that high.

The Bureau of Mines predicts that demand for domestic crude next month will run 7,350,000 b/d—100,000 b/d above its forecast for January.

Texas production will rise slightly next month, based on the allowable that was raised 31,971 b/d.

The initial February allowable in Texas was set at 3,194,826 b/d, based on an 11-day producing schedule in the 28-day month, one day less than in the present 31-day month.

Five large companies that buy 57% of the state's crude requested a hike in the allowable for February. Humble Oil & Refining, Magnolia Petroleum, and The Texas Co. recommended a 12-day schedule, which would have meant a 217,000 b/d jump over the mid-January allowable. Gulf Oil and Atlantic Refining suggested an 11-day schedule.

Many other buyers, and some independent producers, wanted a cut in the February permissible.

The Texas Railroad Commission will ask all major purchasers of Texas crude to submit estimates on desired inventory levels and demand at the Mar. 19 statewide hearing.

New Mexico's production will be up a little next month, due to a 12,870 b/d increase in the allowable.

Total allowable for the state is estimated at 355,511 b/d in February, based on the continuation of the unit allowables of 34 b/d in the southeast and 52 b/d in the northwest.

Louisiana plans to continue its present allowable into February, with an allowance for new production.

The January allowable of 856,140 b/d is based on a formula of 34% of the March, 1953, depth bracket.

Tighter Texas Oil Laws Sought

Oil conservation and antitrust laws in Texas should be strengthened to "effectively" counter "certain anti-competitive practices by importing companies."

That's the recommendation of a special state Oil Import Study Commission, headed by French M. Robertson, of Abilene.

The commission, appointed last November by Gov. Price Daniels, reported in mid-December that Texas congressmen should press for mandatory import controls to reduce the impact of imported oil on the domestic industry, "in its worst condition since the depression" of the 1930s.

The suggested new state laws would give the Texas Railroad Commission additional power. Under the provisions, the commission could:

• Prevent common carriers from abandoning, selling, or transferring crude gathering lines without consent of the commission or all connected well owners.

• Require common purchasers and affiliated common carrier pipelines to make "reasonable extensions" to new fields that may be "reasonably" reached by gathering systems, and require ratable taking of crude along the entire system of any such affiliate, common carrier, or common buyer.

• Prevent "unreasonable discrimination" in crude buying practices between fields in the state.

• Define as a "common purchaser any truck or pipeline gathering system which purchases for resale."

• Define as "conspiracy in restraint of trade" any agreement between a purchaser and a pipeline subsidiary to "boycott or threaten to discontinue buying from or transporting for any producer for the purpose of favoring a company's own production, or that of any affiliated company."

It was especially recommended that the Railroad Commission be given greater authority over truckers of crude.

The study commission noted that the present Texas law covering production, transportation, and purchasing of crude had not been substantially changed since 1932.

"Trucking, which was practically unknown in 1932, has become a great factor in the transportation of oil. We believe that the law . . . should be amended to strengthen the regulatory powers of the Railroad Commission and place additional persons who gather and transport crude, and purchase for resale, under regulations as common purchasers," the commission said.

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What's New / IN THE INDUSTRY

The Canadian Government will ask for the creation of a National Energy Board, Prime Minister John Diefenbaker announced. But he didn't say how much authority the board would have. Last fall the Borden Commission, studying Canadian energy policies, recommended such a board, with broad powers to control exports and imports of oil and gas. The plan was opposed by the Canadian Petroleum Assn., representing producers, and by most major integrated companies.

•

A bonus bid of $5,505.55 an acre for the Ratherford field area in San Juan County, Utah, set a new high for Rocky Mountain Indian lands. The bid, by Standard Oil Co. of California, was for a 160-acre tract of Navajo lands in the southwest quarter of section 9-41s-24e. The company also was the high bidder, at $4,505.55 an acre for the northwest corner of the same section.

•

Texas's share of total domestic crude production last year reached a new low of 38.4%, according to tabulations made by John G. Winger, petroleum economist of the Chase Manhattan Bank. The ratio of Texas production to the total U. S. was nearly three percentage points below 1957.

While total U. S. crude production in 1958 was off 6.5% from 1957, Winger noted, output in Texas was down 12.4% to 2,576,000 b/d. On the other hand, production in the Rockies jumped 10% to a new high of 593,000 b/d, accounting for 8.9% of the U. S. output. New Mexico's production rose 4.2% to 270,000 b/d, amounting to 4% of the nation's total. Louisiana's output was down 5.4%, Oklahoma down 5.6%, and Kansas down 4.4%, but each of those states very slightly increased its percentage share of U. S. output during 1958.

•

Wider spacing rules will not always stand the test of "legality, justness and fairness," Texas Railroad Commissioner Olin Culberson says. His comments were made in a written objection to a commission order approving 160-acre units for allowables for the Dune (Wolfcamp) field in Crane County. The Dune order, he said, "will open the door" for a policy of wider spacing, sought by some "self-appointed leaders." The order "can and will be used by larger operators, both major and independents, to freeze out owners of small tracts."

•

Superior Oil Co. will make the first operational use of thick-jointed aluminum pipe for offshore lines in Venezuela's Lake Maracaibo. The pipe, developed by Reynolds Metals Co., is extruded to provide extra thickness at each end, while using less metal in the pipe "body." Such a design, Reynolds says, puts the metal where it is needed most and offers operating presssures equivalent to standard pipe, at reduced cost.

•

The Justice Dept.'s suit to shut in the Wilmington field in California, due to subsidence will be heard Mar. 24 (PW—Jan.16'59,p25). Los Angeles District Judge Harry C. Westover ordered the government to amend its complaint, staying further proceedings against former producers in the field. The 121 defendants who are present producers have until Feb. 24 to file briefs.

•

Pan American International Oil Co. spudded its third Argentine test this week and plans to start seven more shortly. The company's first test, spudded Jan. 6, is drilling below 3,500 ft.

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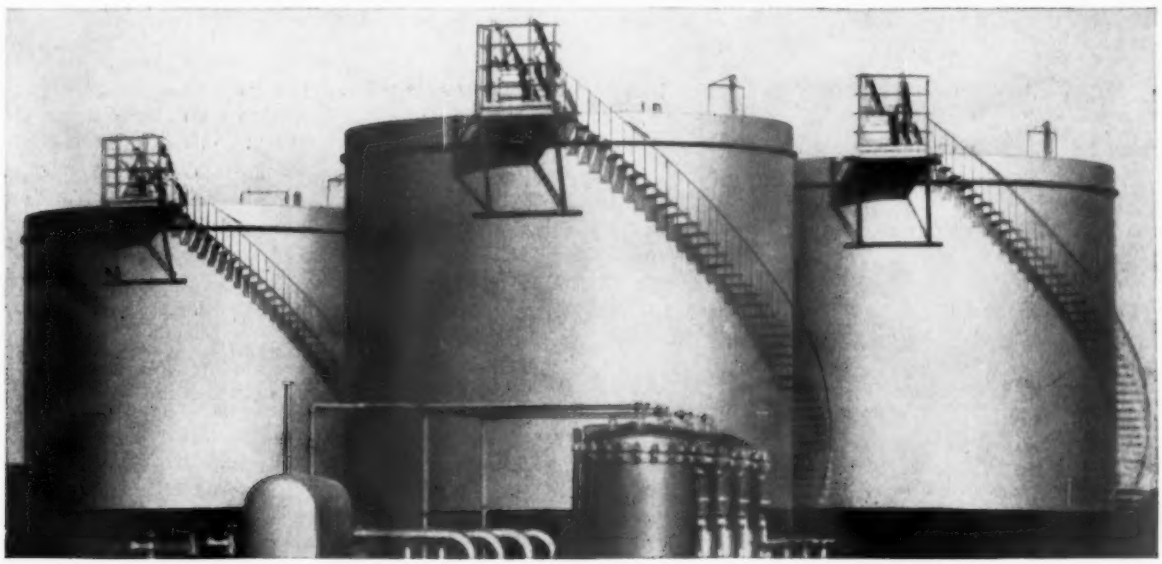

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Looking Ahead in Washington

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January 23, 1959

AT-A-GLANCE
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PETROLEUM WEEK

Eisenhower wants a higher gasoline tax. Whether congress will go along is the question now. There will be strong opposition in both the House and Senate to the President's proposal to finance the interstate highway program: a 1.5¢-per-gal. increase in the federal gasoline tax, boosting it to 4.5¢. Already some influential congressmen have spoken out against the increase. Highway-user groups and motorists' associations will fight it. So will the oil industry. But the highway trust fund needs money to keep construction on schedule. Congress will have a choice of turning to deficit spending, which Eisenhower doesn't want, or increasing taxes—with gasoline the most likely target.

•

Jet fuels, now tax-free, also have been earmarked for taxation. Eisenhower is asking legislation to increase the aviation gasoline tax from its present 2¢ per gal. to 4.5¢. Jet fuel would get the same tax. The money would be used for the federal airways program.

•

Higher fees for noncompetitive oil and gas leases can be expected. This is another Eisenhower budget proposal. Legislation will be introduced, with the Interior Dept. as the main backer, to make 50¢ per acre the across-the-board fee on federal lands. Currently, leaseholders pay 50¢ per acre per year rental for the first three years, and 25¢ per acre per year for the fourth and fifth years, plus a five-year renewal if desired. The proposed new schedule would increase fees to 50¢ per acre per year, with no decrease at all. Unless there is unexpected opposition in Congress, the fee change probably will be made, bringing an additional $14-million per year into the federal till.

•

The administration will encounter trouble in Congress on the idea of dropping the Naval Petroleum Reserves. The President did not make a flat proposal; he said only that the Administration will study the "advisability of disposing of anachronistic Naval Petroleum Reserves." He also asked Congress to make a similar study. But there is little doubt the Administration would prefer to get rid of the reserves. Rep. Carl Vinson (D., Ga.), powerful chairman of the House Armed Services Committee, may be a strong roadblock, however. Vinson traditionally has opposed extended use of the Naval reserves by oil companies. He is sponsoring a bill to create even another reserve: San Nicolas Island, off California. But Sen. E. L. Bartlett (D., Alaska) has introduced a bill which would return Naval Petroleum Reserve No. 4—near Point Barrow, Alaska—to the public domain. So it's possible that Congress might choose to dispose of some—but not all—Naval reserves this year.

•

The present corporate income tax is scheduled for another extension. Eisenhower also asked for this, and there's little chance Congress will decide differently. So the 52% rate can be counted on for another year at least.

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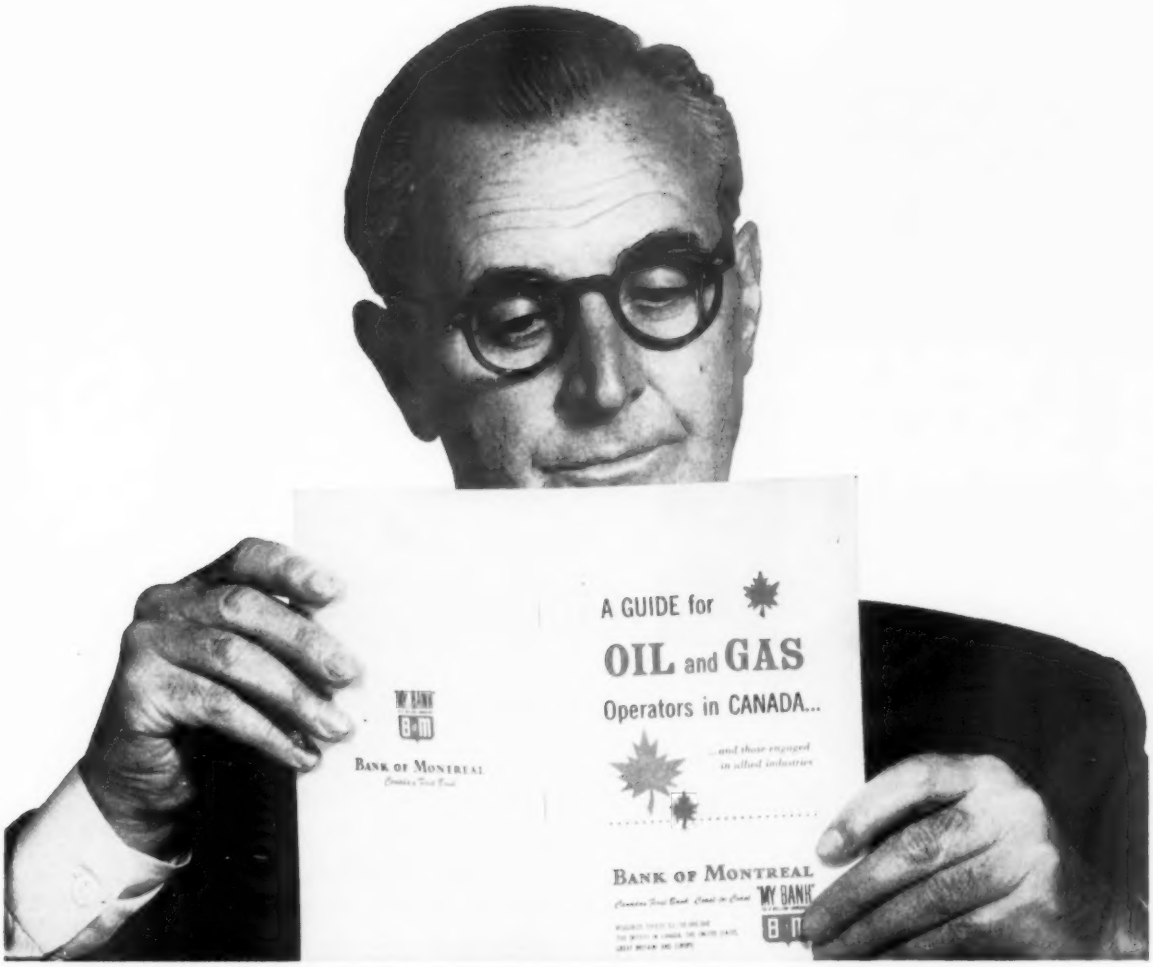
Eisenhower did not recommend a natural gas bill in his budget message. Unless he does so—and strongly—in upcoming messages, you can forget about it for this year.



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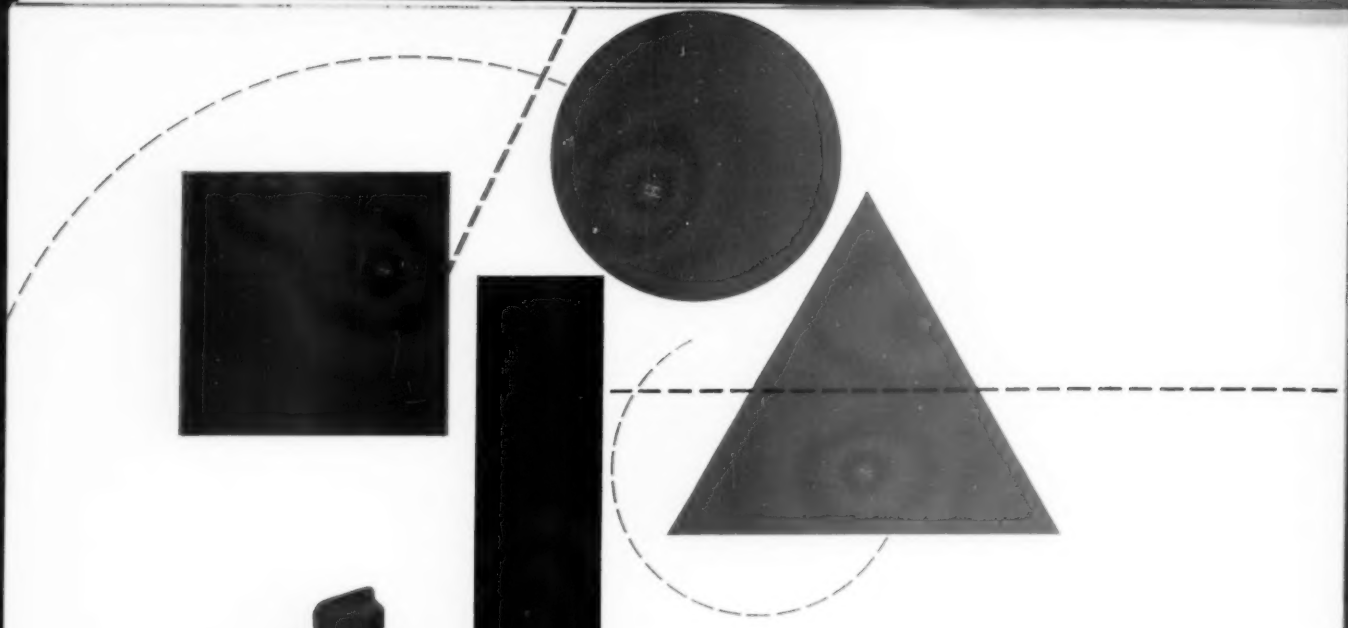

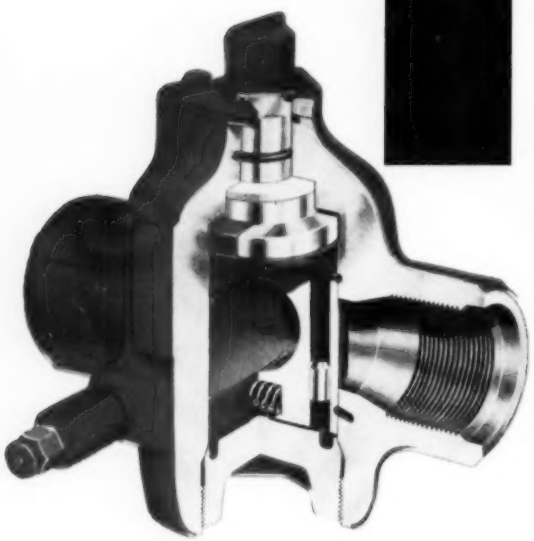

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59-200

Is Geochemistry Worth the Effort?

- **There are signs that some oil companies may be giving exploratory geochemistry a searching new look.**
- **But other observers can't get excited about the method, which has had a long and checkered career.**

Exploration geochemistry—the center of more than one stormy oil industry argument, appears headed for a searching re-examination.

"All we need is just one 100-million-bbl. oil field discovery on the basis of a geochemical anomaly," says one advocate. "Then you'll see the line forming on the right."

While its value admittedly is a thorny question, geochemical exploration apparently has produced some thought-provoking clues that "there may be something to it."

If interest in the method does grow, it will be due (1) to management's eagerness to embrace any reliable technique that will reduce dizzily climbing exploration costs, and (2) to geochemistry's shedding of some of the "black magic" aura that has plagued it for years.

Two separate developments point up the possibility. The most surprising and significant is that one of the best known geophysical firms expects to offer a "chemical exploration" service some time this year.

Geophysical Service Inc., of Dallas, is the company planning to start the contract service. Discussing the move, Eugene McDermott, chairman of the executive committee of Texas Instruments Inc. (GSI's parent company), told PETROLEUM WEEK.

"GSI is an exploration company. If there is any reliable way to look for buried structures on the surface, then we will use it to hunt for them.

"The physics side of this thing [exploration] has been brought a long way since the industry started using it. Now we should go back and bring the chemical side along, too."

Actually, GSI researched geochemistry during the late 1930s and early 1940s, and out of this effort grew a separate company—Geochemical Surveys of Dallas. But GSI itself has since concentrated on the geophysical side of exploration.

The other intimation is that an operator who will drill a 14,000-ft. Gulf Coast wildcat this year plans to log it geochemically.

The purpose will be not only to aid the operator in spotting oil or gas shows during drilling, but also to aid management in deciding whether to drill past contract depth.

In case of doubt, increasing hydrocarbon indications at that depth, or the lack of them, could influence the decision.

What It's All About

Geochemistry is used in many ways in the petroleum industry. When applied to exploration, however, it means soil analysis, basically.

The industry is constantly working on such aspects as the identification of organic compounds in sediments, synthesis in the lab of organic compounds found in nature, investigation of the origin and migration of fluids, and the like.

But, for the moment, the geochemical search for oil is based on finding of hydrocarbon indications in the oil, one way or another.

Geochemical exploration rests squarely on one premise—that hydrocarbons migrate vertically from subsurface accumulations and provide detectable evidence near the surface.

Although there are many branches to this central belief, including such offshoots as microbial detection "instruments," the most widely used methods today assume that hydrocarbons are leaking continuously from the reservoir.

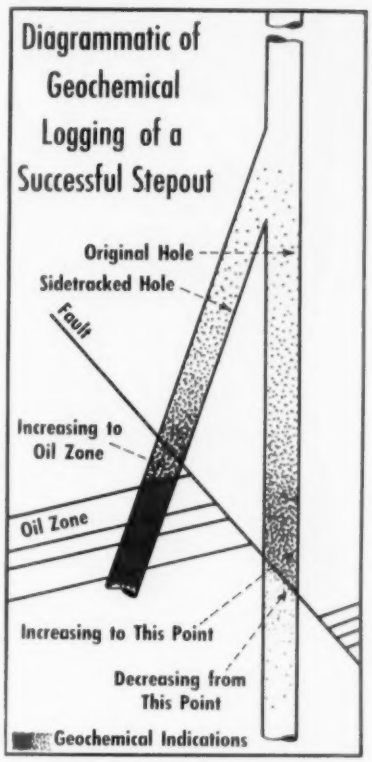
Furthermore, it presupposes that all but an infinitesimal amount rise vertically, or almost so, and collect in measurable concentrations at the surface.

Another key conviction is that hydrocarbons are capable of penetrating so-called "impermeable" strata enroute. One researcher says:

"After all, you can push hydrogen through tool steel in the lab. The truth is, nothing is 'impervious.'"

All of these points are disputed wholly or partially by the critics of the method.

Although many procedures have been proposed and tested, there are two chief approaches for analyzing and measuring soil samples today. One is the direct assay of the hydrocarbons themselves.



NO. 1 C. F. SEABERG was completed as a Martha field (Tex.) extension in 1954. Geochemical logging helped direct the operator to the pay zone.

One of the oldest and most active firms using this technique is the Horvitz Research Laboratories, of Houston, owned by Leo Horvitz.

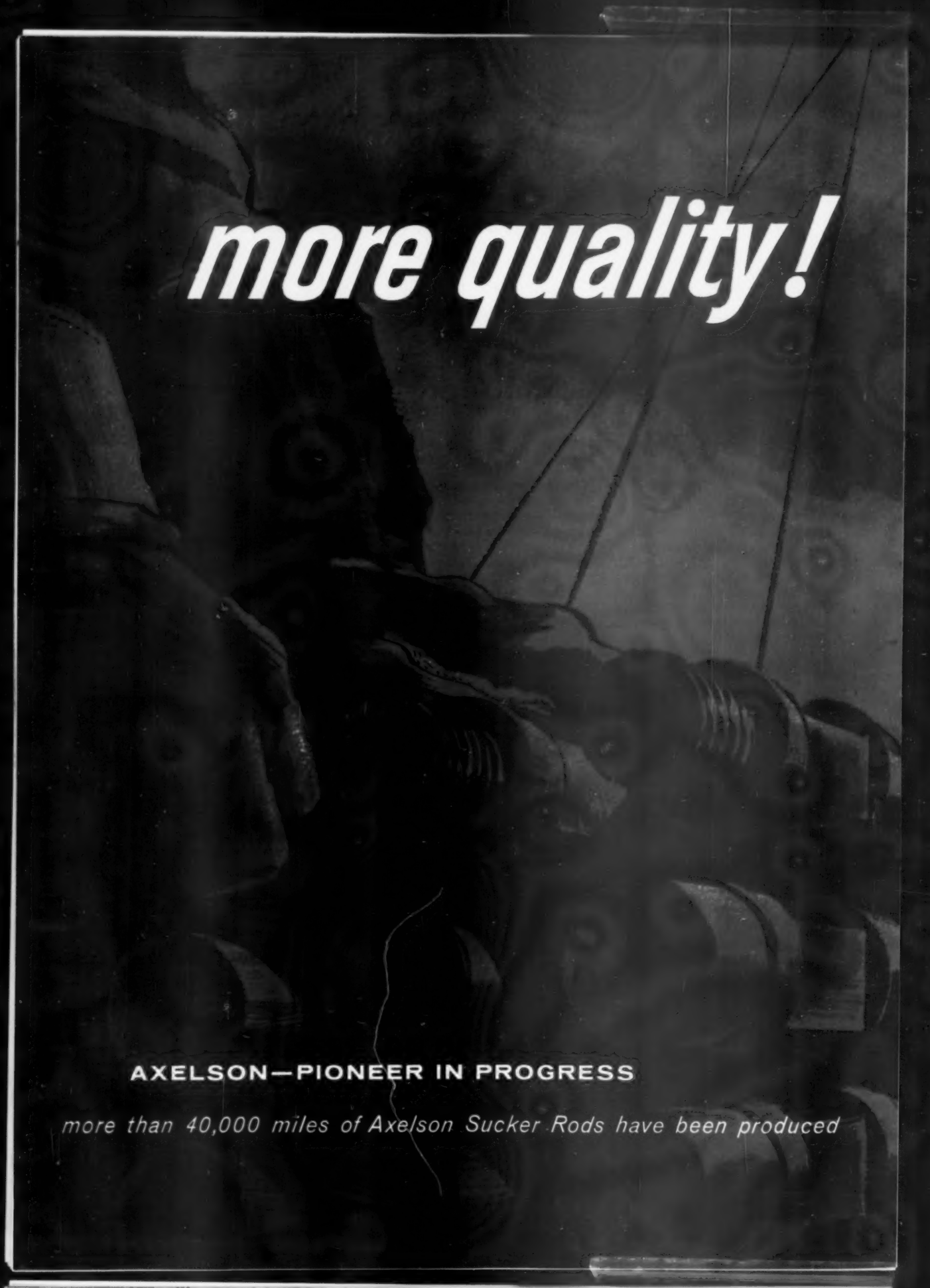
Starting his work in 1936, with Russian-reported techniques, Horvitz was able, by 1941, to extract all hydrocarbons from a sample in a single procedure.

Further refinement has reduced the process to a relatively simple and precise routine.

In addition to geochemical exploration surveys, Horvitz also offers a geochemical well-logging service. Samples of cuttings, taken every 30 ft. during drilling, are analyzed in the same way as reconnaissance samples.

Samples may also be tested for changes caused by the reaction between migrating hydrocarbons and substances in the soil.

This method is used by Geochem-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	YIELD	65/72	65M/72A	60/75	60/75	60/70	65/75	60/75	60/80
	TENSILE	90/105	93M/100A	90/105	90/105	90/100	95/105	90/105	90/100
1¼% NICKEL	GRADE	59	46	5	7	81	40	T	NM
	YIELD	70/78	67M/75A	70/92	65/80	65/75	65/75	73/97	65/80
	TENSILE	87/95	82M/90A	88/113	85/100	85/95	82/95	85/105	85/100
HIGH STRENGTH LOW ALLOY 3½% NICKEL	GRADE	79	—	Reliance	12	92	—	W	—
	YIELD	90/98	—	95/105	95/105	90M	—	105/115	—
	TENSILE	100/108	—	115/130	110/125	115M	—	115/125	—
	GRADE	77	43	Hi-Ten	8	85	75	Y	HT
	YIELD	100/115	100M/110A	95/110	100/115	105T	105/120	95/108	110/120
	TENSILE	120/130	120M/130A	115/130	120/135	133T	125/140	105/115	125/135

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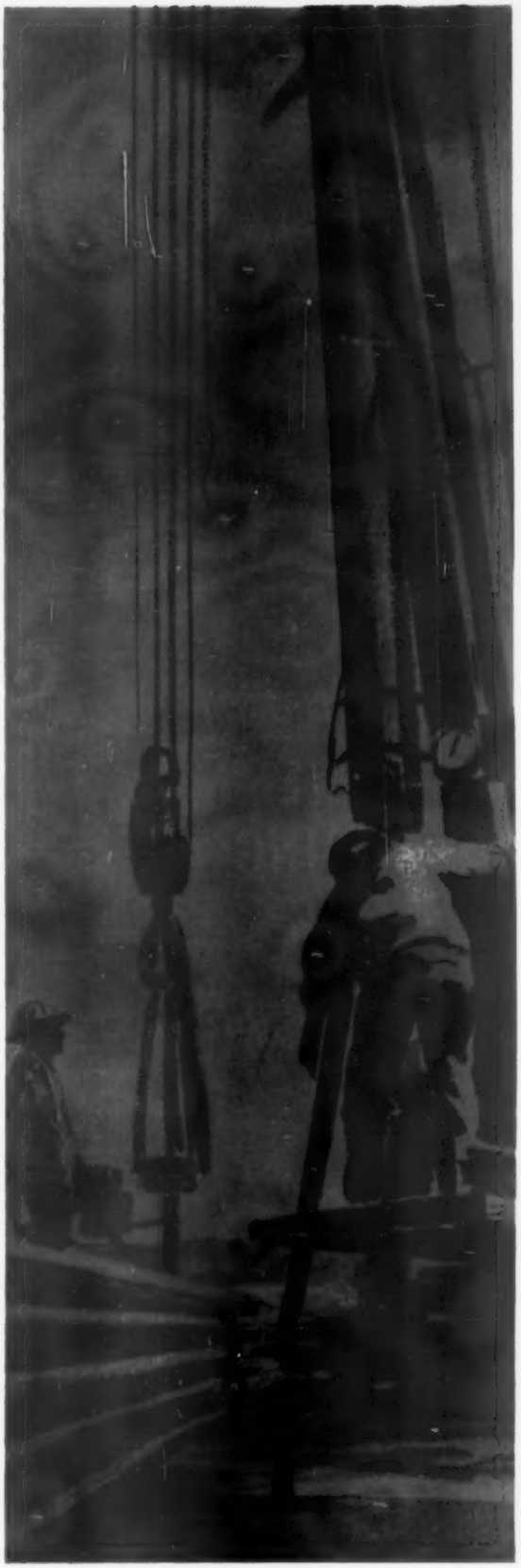

ical Surveys. The company, headed by W. R. Ransone, analyzes samples "for a significant constituent resulting from soil alteration caused by leakage of hydrocarbon gases."

Ransone declines to identify the "significant constituent," on the ground that the knowledge is company property and is helping it to find reserves.

Geochemical Surveys has in the past contracted for surveys, and occasionally still does. But virtually all of its efforts now are directed toward finding reserves for itself and participants.

Over the years, Geochemical Surveys has become convinced (1) that the depth of accumulations doesn't affect "the intensity or magnitude of surface manifestations"; (2) that about 85% "of all oil or gas fields" seem to have "near-surface geochemical anomalies associated with them"; and (3) that geochemical patterns develop over stratigraphic traps.

Either approach requires the careful collection, analysis, and interpretation of a great many soil samples.

Geochemists stress the vital importance of obtaining sufficient field information, and often take as many as 3,000 or 4,000 samples to outline one prospect.

Even so, they say the work is relatively inexpensive, compared to more orthodox exploratory methods.

The cost of geochemical exploration is reported to be roughly that of gravity meter surveying. It will probably run about $6,500 per month for a crew, including all the field and lab work.

"Acreage-wise, however, the cost of a geochemical survey is much less than that for seismic shooting," adds one geochemist, "because we can cover a great deal more area in the same time than a shooting crew."

Very briefly, here's how it works:

Reconnaissance is conducted in a wide area, usually along roads. The samples, analyzed back in the lab and mapped, may indicate "leads."

Crews then "work in" for more detailed pictures, winding up, usually, with something like a quarter mile grid over the prospect.

The depth for sampling ranges from 2 or 3 ft. in arid areas to about 12 ft. along the Gulf Coast.

During the preliminary survey, a "background" count for hydrocarbon concentrations is established. Anomalies show up as variables from this norm.

The pattern of an anomaly is outlined by linking together (contouring) points of high concentrations.

Geochemical anomalies take several forms.

For some reason, not clear even to those experienced in the method, the better reservoirs apparently are outlined by "halo-like" anomalies, defining the outer perimeter of the accumulation.

But less significant, though worthwhile, reserves sometimes are indicated by a high concentration of values right over the accumulation.

Faults also are said to show up in a characteristic manner, and there are also "narrow band" reservoir patterns.

A continuing buildup of data reportedly is helping to refine the interpretation of concentration values.

"Significant geochemical anomalies will range 250% or more above the background," says Horvitz. "In general, if you don't have values that are 25 parts per billion or more, you're not in an anomaly."

Primarily because of different analysis techniques, there may be some other ideas on this point. But the hope is that steadily increasing empirical results will help establish firm standards.

Some of the results claimed for geochemical exploration are highly interesting, to put it mildly.

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expert once called the shots on 16 wildcats prior to drilling, saying 13 would be dry holes, and 3 producers. Postdrilling results: of the predicted dry holes, 12 were dry and one produced only briefly; of the predicted producers, two were discoveries and the other found a thin pay zone, with a field subsequently developed around it.

Late in 1954, Gulf Coast Leaseholds extended the Martha field, Liberty County, Tex., at least partly on the basis of geochemical information.

One test, the No. 1 C. F. Seaberg was dry when drilled to about 9,000 ft. A fault, however, had been cut at about 8,250 ft. (diagram, page 25).

The hole was geochemically logged by Horvitz during drilling, and had shown continually increasing concentrations of hydrocarbons right up to the point where it cut the fault.

A surface geochemical survey, meanwhile, had indicated an anomaly under the test. It was concluded that the hole had just missed an accumulation by cutting the fault too far down.

So the operator moved uphole, sidetracked, and found two productive sands—just 281 ft. away from where the log had shown the highest readings in the original hole.

A log showed concentrations in the sidetracked hole increasing steadily to about 20,000 parts per billion at the pay zone.

"That's what made me sit up and take notice of geochemistry," said Robert G. Behrman, then president of Gulf Coast, and now a Houston consultant.

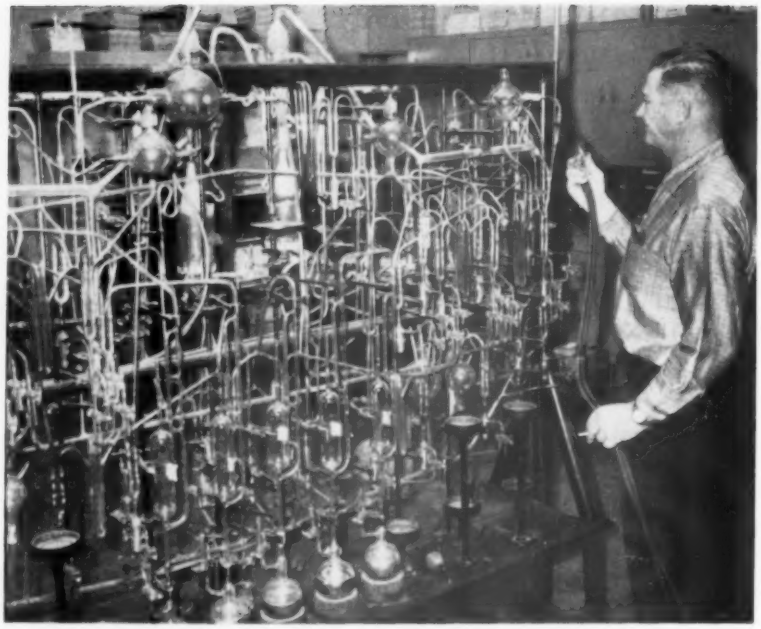
Geochemistry has "pointed to" several fields before discovery, even though they were actually drilled on the basis of other information.

Horvitz says the Bonney field, Brazoria County, for instance, "could just as easily have been one of ours. We tried to get people interested in it. In the face of structural evidence showing the field was to the east, we said it was to the west. And it was."

Horvitz estimates that "of those wildcat geochemical anomalies that have been drilled (most of them actually drilled on the basis of other data), better than one out of three has been found to be associated with oil or gas."

There are some definite oil finds credited to geochemical exploration by the method's adherents.

Geochemical Surveys reports it has developed, leased, and drilled—or caused to be leased and drilled—a total of 102 prospects "which were first-class geochemical anomalies" between January, 1942, and January, 1958.



COMPLICATED GLASSWARE UNIT is part of Horvitz Research Laboratories' equipment used to analyze soil samples for hydrocarbon concentrations, a basic of geochemistry.

"Of these 102 prospects, 26 resulted in profitable oil or gas fields, in which Geochemical Surveys has a participating interest," the firm adds. "One is in Alberta, one is in California, and the remainder are in Texas.

"Of the 102 geochemical prospects drilled, the first 25 were tested without benefit of additional seismograph or core drill work and five field discoveries resulted.

"The remaining 77 geochemical prospects were thoroughly detailed with one of the structural tools, and 21 field discoveries resulted."

If geochemical exploration ever wins industry acceptance, it could mean a boost for geophysics, rather than a setback.

Proponents of exploration geochemistry don't claim that it is the only answer to finding oil. In fact, they urge the gearing together of chemical and structural tools.

GSI's McDermott sees it this way: "Chemical exploration is a reconnaissance method. You cover counties, not just acres. It is a screening device. It won't tell you where to drill; it tells you where to put the seismograph.

"The physical isn't the only thing to look for. There are also chemical changes in the earth. The industry's big need is for a 'seismograph locator'—something to tell you where to use the seismograph, which, in turn, tells you where to locate the drill.

"It's not enough to use chemical exploration alone. We must make both chemical exploration and seismology more effective. Chemistry will allow us to use even more expensive seismograph tools because we will be able to concentrate the seismic work in small areas, once chemical exploration has outlined those favorable areas. I think it could mean a new era for domestic exploration."

Says Ransone: "Geochemistry is not a precision method. It certainly is not a detailing and structural tool. It is good for reconnaissance—then you must shoot."

There are some obvious and admitted weaknesses, such as a lack of depth perception.

While a geochemical anomaly does indicate the size of a prospect, there is no way to determine how deep the accumulation is below the surface.

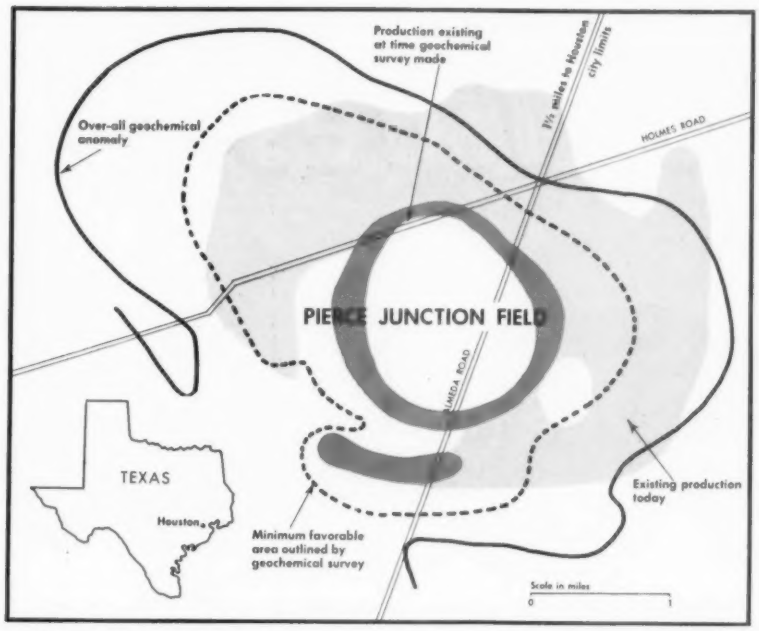
Geochemical experts don't foresee any possibility of ever overcoming this drawback.

Further, extremely precise procedures are mandatory to avoid interpretation errors.

But the backers stress that one of geochemistry's most valuable aspects is that a negative survey is just about an absolute condemnation of a prospect.

"If you drill on a seismic picture and get a well, you don't know what the aerial extent is," says Horvitz.

"With geochemistry, we know before we start drilling that the chances



GEOCHEMISTRY PATTERNS were established in this field during the early stages of production. Subsequent development shows how the geochemical analysis compared.

are that the prospect is let's say, 300 acres, and not 1,000 acres. We don't kid ourselves. Even if you get an excellent well, you know the prospect is not going to stretch from 300 or 400 acres to 3,000 or 4,000 acres."

Dozens of examples of this facet of geochemistry can be cited by adherents. One, mentioned by Horvitz, involved a several-thousand-acre ranch in Northwest Texas, which was worked both seismically and geochemically. Shooting indicated a 3,000-acre anomaly and a small "hickey."

The geochemical survey condemned all except one small anomaly coinciding with the seismic "hickey."

The operator went into an expensive leasing program and drilled several dry holes. Then the location where the geochemical and seismic findings coincided was drilled, resulting in a small field.

In one Lower Gulf Coast area, geochemists noted that at least 45 dry holes were drilled on other information at locations in a low background area—and at least 35 of them were drilled after the negative geochemical findings were available.

Paying more attention to negative geochemical findings could save the industry millions by reducing the ratio of dry holes, the geochemists believe.

One oil company official, who personally favors geochemistry, estimates that, in a seven-year period, the method helped to find reserves for less than 20¢ per bbl., compared to about 90¢ per bbl. for oil found by conventional means.

To McDermott it means: "If we can find domestic oil cheaper, we can keep out imports."

At any rate, the method has attracted some very firm friends.

Why It Is Criticized

There are some oil men, who have had experience with geochemistry, who simply believe it adds up to nothing at all.

From these come such typical comments as:

"The 'successes' of geochemistry are just crapshooter's luck."

"Scale a map of the Gulf Coast so that the average oil field is about the size of a penny. Toss a handful of pennies on it and many of them will at least touch one of the known fields."

"We took about 50,000 soil samples, half of them over unproved areas, and half over known production. Statistically, the results came out exactly the same. That demonstrated to me that geochemistry is sheer chance—nothing more."

Even the basic tenet of exploratory geochemistry—vertical migration of hydrocarbons—is discounted by the critics.

The major objections include these:

- Hydrocarbons are more likely to follow planes of weakness, such as faults, cracks, and fissures. If they do eventually reach the surface, therefore, they are likely to be miles away from the accumulation itself.
- If such migration did take place from the time the oil was laid down, it would have depleted the reservoir.
- There are other surface and subsurface sources for indications of hydrocarbon concentrations—decomposed plants and vegetation, and the like.
- Migrating hydrocarbons couldn't penetrate impermeable formations because there isn't sufficient force behind them.

But apathy, not active opposition, appears to be geochemistry's toughest adversary.

The reaction is much more apt to be one of "Maybe there's something to it, but I'm not convinced," than one of "I wouldn't give you $10 for all of it."

One major oil company spent about six years of field and laboratory research and reports that it did find, "without any question, oil and gas seeps that could not be detected visually." The researchers, however, concluded that the indications occurred without any reliable pattern.

The firm's research director says the project was dropped, explaining:

"You couldn't classify us as opponents of geochemistry. We certainly go along with the general concept that you do have such things as micro-seeps. They can be detected geochemically. There is no question about it at all.

"Now, the big problem, once they are found, is to know what their relationship is to the subsurface accumulations. That's it in a nutshell."

One independent says, succinctly: "If people could find oil with it, they'd be using it."

Obviously, abundant incontrovertible proof will be necessary for geochemistry to win industry acceptance.

The Outlook

Not even the severest critic of geochemical exploration disagrees with the premise that hydrocarbon seeps and leakages exist, and that they have played a big role in finding oil.

The literature is replete with descriptions and references to seeps and leakages. The discovery of many, if not the bulk, of the world's largest fields is credited at least partly to such indications.

As one petroleum scientist points out: "You do have the big seeps, and a continuous reduction in size, down to the smallest. Logic tells you that there probably isn't any sharp breakoff—that they must continue on into

Natural Gas Pipe Line Company of America completes 513 miles of looping line in record time

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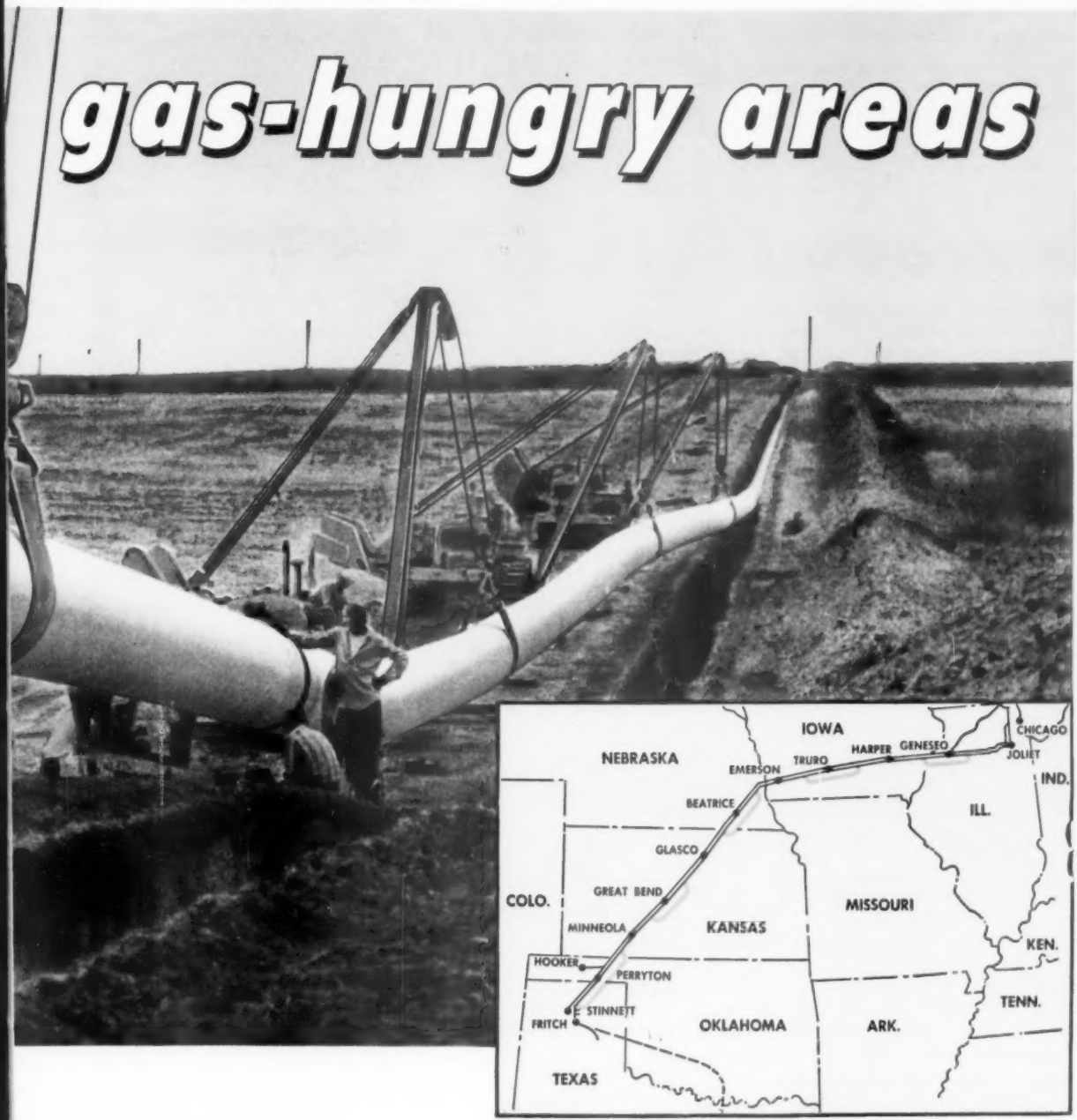

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the invisible range, which, of course, justifies geochemistry per se."

Geochemical exploration certainly hasn't been rejected completely by industry research and trial.

In this connection, Southwest Research Institute, of San Antonio, "impartially evaluated" 105 "new or little-known methods of seeking underground petroleum deposits" during a three-year study.

Among the very few methods that "possessed some degree of technical merit" and were "worthy of careful scientific study" was geochemistry.

The institute suggested that more exhaustive examination was warranted, even though there "probably are interfering factors, such as nonisotopic permeability and ground-water movement."

Geochemists say they would welcome a truly impartial acid test of the method. So far, they aren't convinced a satisfactory one has been undertaken.

Proponents aren't impressed by such tests as the taking of random samples over productive and nonproductive areas, any more than critics are impressed by geochemistry's success claims.

For example, Horvitz says his work demonstrates conclusively that hydrocarbon concentrations are higher in value over an anomaly before drilling than after the field is developed.

"So taking a bunch of samples over known production—particularly if it is old production—doesn't mean a thing," he says.

The kind of test geochemical explorationists want is a methodical, controlled evaluation, geared integrally into a reasonably extensive drilling program.

SWRI outlined something along this line in its report:

"It is recommended that statistically valid field results of new methods be relied upon whenever possible. . . It suggested that predictions filed in advance of wildcat drilling constitute the ultimate test of any oil-finding method, despite the known limitations of the drill as a means of confirmation. . .

"The outstanding unsolved problem at this time appears to be that of 'surface patterns' detectable by radioactivity, electrical, or chemical means. . .

"Improved means are needed to detect 'oil patterns' in the midst of soil variations of other types. If they can be shown consistently to exist over oil fields, their mechanism and laws of formation should be determined to permit intelligent exploitation."

This fits right in with what the supporters of geochemistry say should be done: Subject the prospect to predrilling geochemical reconnaissance, compare the information in advance with other exploratory data, and compare well-by-well postdrilling results fairly and systematically.

If enough wells are drilled in such a program, they maintain, the results will confirm the reliability of geochemistry.

It may be that some such steps already are being taken.

It isn't always easy to determine the exact status of research being carried on. One company says publicly that it is "not doing anything" about exploration geochemistry, but is reported by other industry sources to have several crews working quietly.

And it is known definitely that another company is not only using the procedures, but is even using the laboratory equipment of an independent geochemical analysis firm in its own evaluation program.

Whether or not geochemistry is here to stay, oil men can expect to hear more about it, one way or the other. The chances are even fairly good that the next two or three years may see the geochemical exploration issue settled, one way or the other.

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- *has a 6,640-mile coastline*
- *has, as its approximate geographic center, a point in latitude 63° 46', longitude 152° 20'*
- *has produced some oil since the early 1900's*
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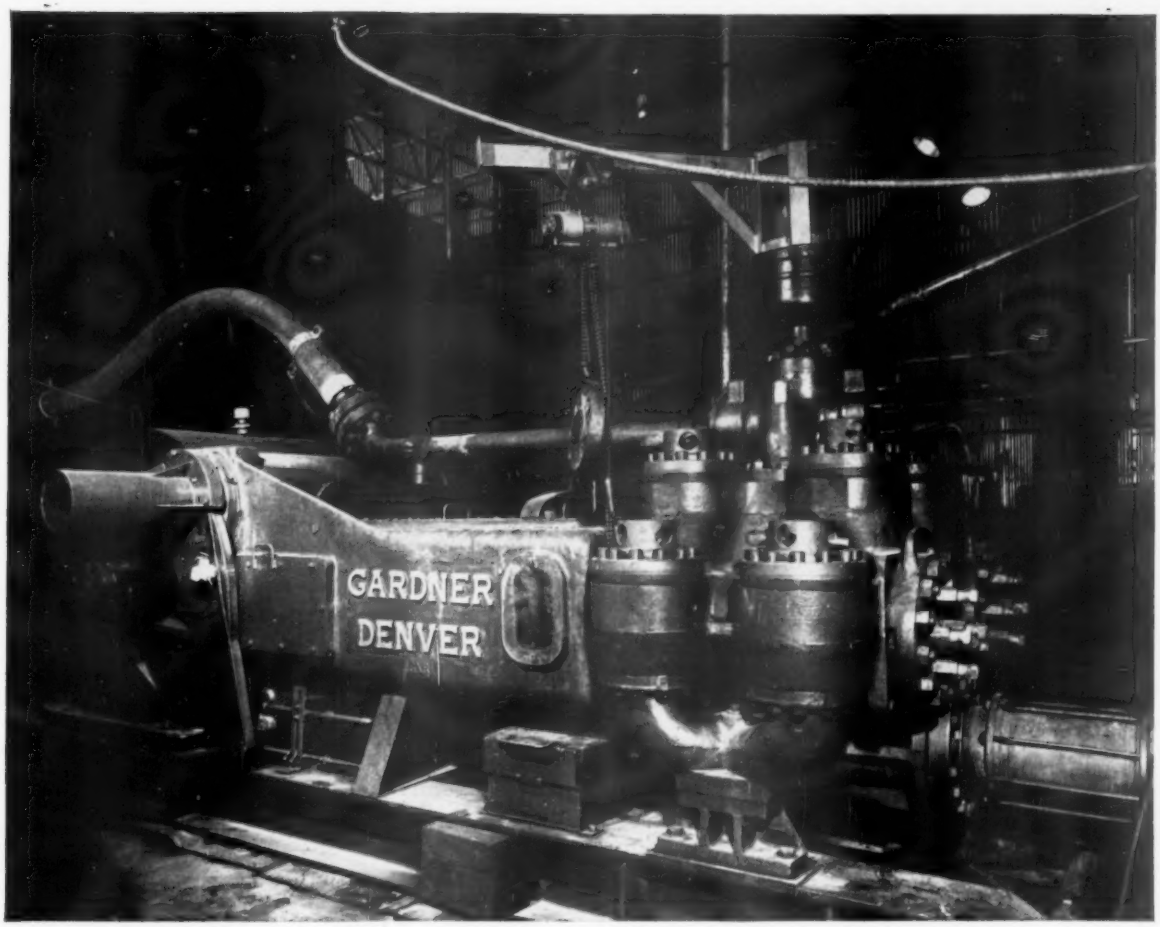

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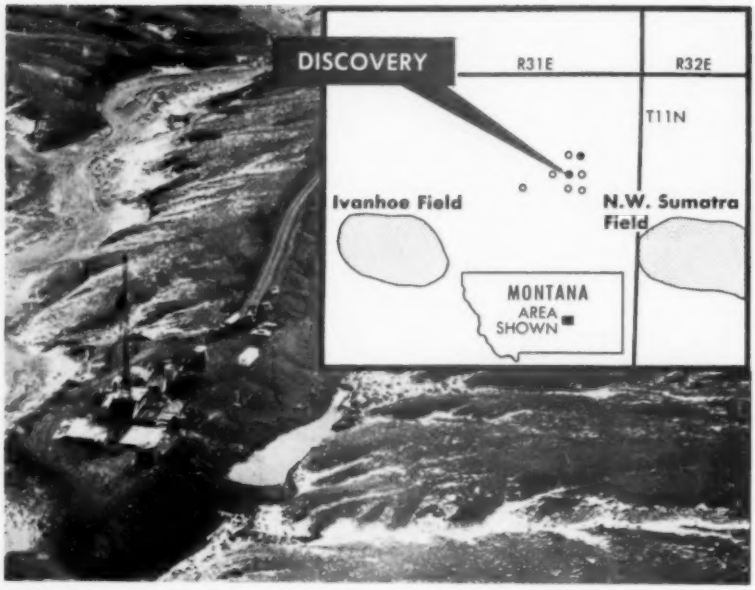

DISCOVERY by Honolulu Oil is drawing heavy attention from operators as . . .

Montana Shallow Pays Beckon

A 448 b/d Mississippian discovery by Honolulu Oil Corp. has spotlighted attention of both independent and major companies on Rosebud County in central Montana.

Since completion late last month of Honolulu's No. 11-9 Stensvad, section 11-11n-31e, one offset has been completed, another currently is drilling, and five more 40-acre locations have been approved by the Montana Oil & Gas Conservation Commission.

Honolulu drilled its discovery to total depth of 5,516 ft. in the Heath formation, then plugged back for completion through perforations at 5,308-80 ft. in the Tyler "B" sand of Mississippian age.

Two pays now have been established for the new field.

Immediately following the recovery of oil from the Honolulu well, McAlester Fuel Co. spudded its No. 1-A Montana-Federal as a 40-acre northeast offset in section 12-11n-31e.

The offset was completed for 110 b/d from the Tyler "A" sand after developing water in the Tyler "B." The well is somewhat lower structurally than the discovery.

Current geologic information tends to indicate that coalescence of the two producing sands is likely at some point within the presently defined limits of the new field. Future development drilling will be required to prove or disprove this theory.

A Jan. 7 hearing of the Montana Oil & Gas Conservation Commission apparently established concurrence among interested operators that the new field is producing from a reservoir separate from the nearby Northwest Sumatra and Ivanhoe fields.

These two established fields, lying 1½ mi. southeast and 2¾ mi. southwest of the discovery, respectively, also produce from Mississippian sands. But several factors indicate separation between the old and new fields.

In testimony presented at the commission hearing, Honolulu cited lenticularity of the reservoir sands, a possible fault, and bottomhole-pressure data as supporting evidence of separation.

Honolulu, and apparently other operators as well, views its discovery as significant primarily because it moved away from a known anticlinal area and was drilled on the flanks.

Comments at the hearing ran something like this:

". . . The most important discovery in Montana in more than a year."

". . . Watch the scramble for leases now."

". . . Montana needs more exploratory drilling, no matter who does it. That area is pretty attractive, costwise."

Company officials believe evaluations similar to those used in staking the Stensvad test now may be applied to other known anticlines.

"The central Montana area has numerous possibilities, and we can see future development in drilling on the

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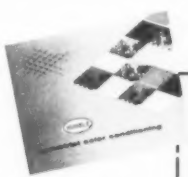

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flanks of the big Cat Creek anticline —at least along its southern part," a Honolulu spokesman told PETROLEUM WEEK.

"The exact sites haven't been picked yet," he said, "but I know of three joint-account wells that will be drilled southwest of the producing anticline."

The big thing that makes central Montana look attractive to Rocky Mountain operators is its more-shallow pays, resulting in lower-cost drilling.

Says one operator: "If you compare drilling cost in central Montana to the cost of drilling on the eastern slopes of the Continental Divide (the Disturbed Belt)—the former is very low."

Although central Montana is geologically complex, it is basically a shelf area. Most of the probable pay zones demand drilling to depths not exceeding 6,000 ft., and in some instances much less.

Texas Oil Field Thefts Diminish

The concerted drive of Texas lawmen to cut down thefts of oil field equipment—which at times have reached $1-million per year—held 1958 losses to about $100,000.

"This is a major drop from the million-dollar annual losses in the 30s," says Fred H. Prestage, special investigator for the Texas Mid-Continent Oil & Gas Assn. (PW—Aug. 16'57,p32).

Prestage, speaking before the Southwest Texas Chapter of the American Petroleum Institute last week, said that in recent years the "big-time" oil field thief had been eliminated, but that numerous small operators still keep losses high.

Cooperation between Texas law enforcement agencies and oil industry investigators is credited for halting the widespread mercury thefts that hit the state in 1958.

About 5,000 lb. of mercury, valued at approximately $20,000, were stolen from metering equipment over a four-month period before the pilferers were jailed, he said.

Prestage urged oil men to follow the association's basic rules to reduce the success odds of thieves: mark equipment, post watch over leases, display the association's reward sign, and report losses promptly.

He said that tools and equipment that are not marked or branded make identification and recovery almost impossible.

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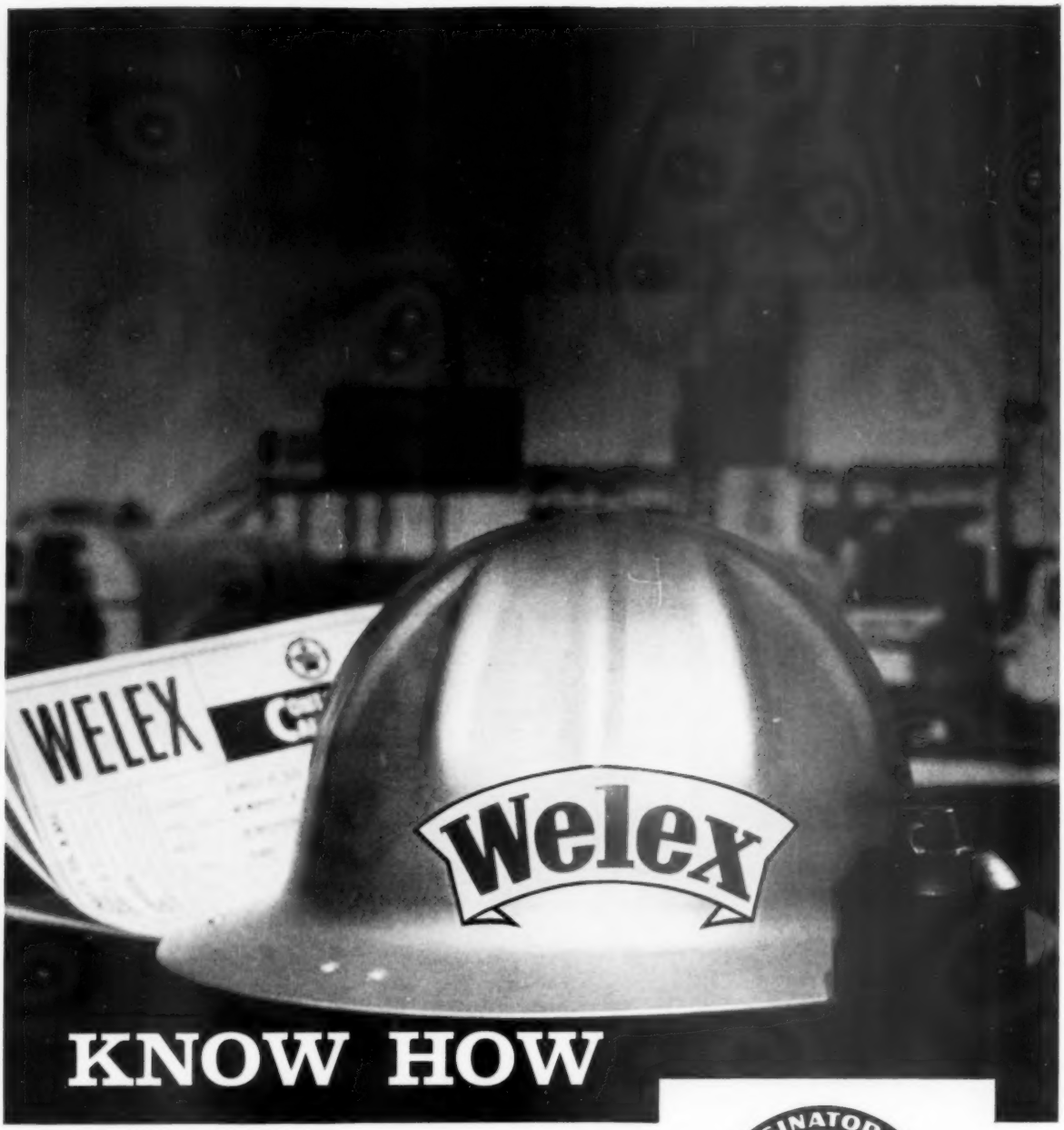

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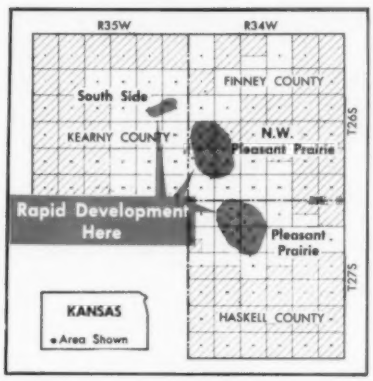


Pipeline Kicks Off Kansas Drilling Play

A new pipeline has touched off a three-field oil-development program in the Pleasant Prairie area of the Hugoton gas region, in southwestern Kansas.

The three fields are Pleasant Prairie, Northwest Pleasant Prairie, and South Side, in Haskell, Finney, and Kearny Counties, respectively.

White Eagle Oil Co., Tulsa, most active operator in the area with 32 of the 43 wells in the three fields now has two drilling rigs at work adding three wells a month, aiming for 60 wells in operation by the end of this year.

The new 48-mi., 6-in. pipeline, owned by Jayhawk Pipeline Co., connects the area with the company's 242-mi. main line that runs northeast from Meade County, just southeast of Haskell County.

Production comes largely from the St. Louis section of the Mississippian around 5,100 ft., with additional pay zones in some wells in the shallower Morrow and Kansas City-Lansing sections. The wells are on 80-acre spacing, with Mississippian allowable set at 65 b/d.

White Eagle geologists say St. Louis net pay has ranged from 12 ft. to 54 ft. On state potential tests, the wells show a pump capacity of about 150 b/d.

•

Utah Spacing Hearing Set

Spacing in Utah's Paradox Basin fields will be taken up by the state Oil & Gas Conservation Commission at a Feb. 2 hearing.

Hearings were recessed last August on the ground that additional information was needed to determine whether wells should be on 40-acre or 80-acre spacing. Several applicants—including both majors and independents—seek 80-acre spacing, which is the present drilling practice through most of the area.

The commission will be armed with a report now being prepared by Core Laboratories, Inc., on pressures and other reservoir-engineering data when the hearing opens.

Although the hearing order dealt only with the Aneth area, a concurrent inquiry into spacing at Desert Creek is likely. The decision on spacing is expected to set the pattern for other fields in the basin.

•

Pan American Petroleum Corp. has acquired a lease spread of more than 10,000 acres in northwestern Martin County, West Texas.

The leases lie immediately north, west, and south of Breedlove Devonian field, in leagues 255, 256, 257, and 258, Briscoe County school land survey. The acreage is just north of Pan Am's 13,000-acre Flynt Ranch block.

Pan Am obtained the five-year leases from F. D. Breedlove, the J. E. and L. E. Mabee Foundation, and others. Full consideration was not revealed, but it includes a cash bonus, plus an oil payment of $250 per acre out of one-sixteenth of seven-eighths of all oil produced.

•

Fifty tracts of Colorado state land (14,299 acres) have been leased for a total bonus of $12,232.97.

Ohio Oil Co. was the most active bidder at the regular January sale, leasing 12 tracts. Three of these were in Adams County, one in Bent County, one in Prowers County, and seven in Yuma County.

High bid was The Texas Co.'s $12.36 per acre for a 160-acre tract in Logan County.

•

The Texas Railroad Commission has been asked to approve unitization and a pilot thermal recovery project for the Amerada sand in three leases in Coleman County Regular field, Coleman County, Tex.

John H. DeFord, trustee for Harvest Queen Mill & Elevator Co., seeks the approval for his Knight B, C, and D leases.

The initial pilot area covers about 3.7 acres, and planned air injection rate is about 300,000 cu. ft. daily for about 14 days into a central injection well before ignition is attempted.

Production now is down to about 1 b/d per well. Estimated additional oil recovery as a direct result of the program is 15,000 bbl.

•

Standard Oil Co. of California is stepping up its drilling pace on Alaska's Kenai Peninsula.

The company, operator for itself and Richfield Oil Corp. (L.A.), is looking for a rig capable of going to 17,000 to 18,000 ft.

Rumored site of the deep test is the Deep Creek Unit, the site of last summer's 14,221-ft. dry hole, which is the deepest hole ever drilled in Alaska.

Standard presently is operating one rig on the 71,600-acre Swanson River unit.

In a related development, General Petroleum Corp. is checking the availability of a contract rig for a job this summer in the Bristol Bay area.

•

Oklahoma's 821 wildcats drilled in 1958 resulted in 85 oil and 43 gas discoveries, according to figures compiled by the state's Oil Scouts Assn. In addition, there were 11 oil and 4 gas discoveries from reworked dry holes.

Texas County had the highest success ratio, with seven oil wells and one gas well completed out of ten attempts.

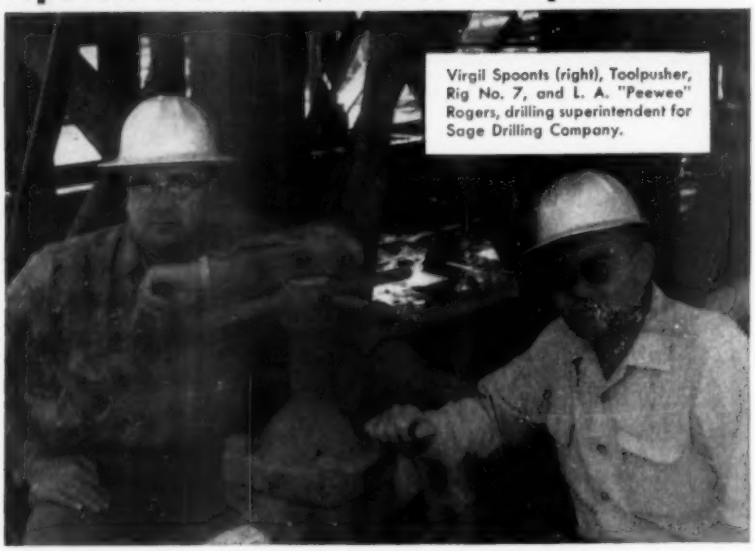
Kiowa County had the highest number of wildcats—165—but only six were completed as producers.

•

Drilling Highlights

Louisiana Offshore — Continental Oil Co. (as operator for the CATC group) No. 1-A Ship Shoal Block 199, about 50 mi. off Terrebone Parish, was dually completed for 321 b/d of oil through 10/64-in. choke and perforations at 9,901-06 ft. and 291 b/d through 10/64-in. choke and perfora-

Tips on Mud Valves for Toolpushers...



Virgil Spoonts (right), Toolpusher, Rig No. 7, and L. A. "Peewee" Rogers, drilling superintendent for Sage Drilling Company.

Our Mudwonder Valves just *don't* sand up!

by Virgil Spoonts, Toolpusher, Rig #7
Sage Drilling Company, Blanding, Utah

"I'VE used a lot of different mud valves in 10 years of toolpushing. Used to be, I'd have to baby them along . . . operate the standpipe valve every day or so to keep 'em flushed out. If I didn't, they'd sand up so bad I'd need a 36-inch wrench to close them.

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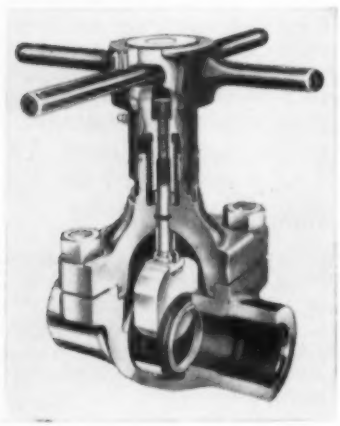
"We rigged up new with Mudwonders on Number Seven. 17 two-inchers and 4 of the four-inch size. Since we started drilling, in August, 1957, we've had to repair only one of them. It was used on jet and hadn't been properly closed. But it's real easy to put in a new insert—or even a gate—without disturbing any connections.

"Lack of downtime is mighty important to us. We've had *no* lost time due to Mudwonders, except the ten minutes it took to repair the one I mentioned. Parts are no problem, either. We just keep a couple of seat inserts and an extra gate on hand for each size—how's *that* for inventory control?"

Mudwonder valves are built in 2", 3" and 4" sizes; with screw or flange ends; for 2000 psi WP (4000 psi test) and 3000 psi WP (6000 psi test) service. See your favorite oil field supply store, or write Edward Valves, Inc., East Chicago, Indiana, subsidiary of Rockwell Manufacturing Company.

Mudwonder cut-away view shows the one-piece seat insert, with Buna-N molded integrally over steel wear rings; chromed gate with "T" slot connection; separated stainless stem and double thread construction.



tions at 9,981-86 ft. Nearest production is 9 mi. northeast.

Mississippi—Larco Drilling Co. and Dave Gammill No. 1 Nina Ostarly, section 21-4n-7e, Pike County Tuscaloosa discovery 9 mi. southwest of Little Creek field, was completed for 188 b/d of 38-gravity oil through 10/64-in. choke and perforations at 10,928-36 ft.

Oklahoma—Skelly Oil Co. No. 1 Alexander, section 25-24n-26w, Ellis County's first oil well, was completed for 128 b/d of 43.3-gravity oil and 118,000 cf/d of gas through ½-in. choke and perforations at 8,131-73 ft. in the Morrow. The well is on the west side of gas-distillate-producing Northeast Catesby pool.

New Mexico—Ohio Oil Co. No. 1-10 Federal-McGrail, section 20-8s-37e, Roosevelt County, opened Pennsylvanian production 3 mi. northeast of Allison field, flowing 719 b/d of 47.5-gravity oil, based on 6¾-hour flow through 20/64-in. choke and perforations at 9,490-510 ft. in the Bough C sand.

Alberta—Ambassador Oil Corp. No. 16-7 East Drumheller, lsd16-7-29-18w4, flowed 480 b/d through 24/64-in. choke and perforations at 4,202-08 ft. and 4,212-20 ft. in the Basal Blairmore. The well is 6½ mi southeast of Drumheller field.

Oregon—Linn County Oil Development Co. No. 1 Barr, section 32-11s-1w, Linn County, has been suspended until the end of the rainy season, sometime in April or May. The wildcat, presently bottomed at 4,529 ft., had oil and gas shows on tests, but completion tests have failed.

North Dakota—Amerada Petroleum Corp. and Hunt Oil Co. No. 2-A-C North Dakota, section 16-158n-95w, Williams County, flowed 277 b/d of oil and 44 b/d of water through perforations at 9,980-10,012 ft. and 10,020-74 ft. The Devonian discovery is 2 mi. west of Tioga field.

Correction

A new gas turbine developed by the Russians for use in oilwell drilling was incorrectly referred to by PETROLEUM WEEK as a gas-driven turbodrill (PW—Jan.9'59,p28).

The turbine—itself a replacement for the conventional diesel engine as a surface power source—is being used in conjunction with the downhole turbodrill.

Reduce drilling costs... use DRISCOSE* low solids mud

Studies contrasting the drilling efficiency of low solids versus high solids muds show **increases in feet-per-bit ranging from 22 to 97%, and increased penetration rates from 26 to 48%.** It is understandable then that more and more operators are combating ever increasing costs with low solids muds . . . and specifically low solids muds formulated with High-Viscosity DRISCOSE. With this pure CMC material, you can make a mud containing a minimum of solids, yet possessing the necessary viscosity, wall-building properties, low gel strength, stability, etc.

A reduction in solids of 19.25 lbs. per bbl. can be obtained in mud with an apparent viscosity of 16 centipoises by using ¾ lb. of High-Viscosity Pure DRISCOSE and 5 lbs. of bentonite per bbl. of water. Normally, mud of this viscosity requires approximately 25 lbs. of bentonite per bbl. of water.

Technical data and literature . . . assistance on formulating low solids muds available upon request.

Four grades of DRISCOSE are available from your mud dealer: High Viscosity, Medium Viscosity, 70S High (all 99+% pure CMC) . . . and Technical Grade (72% CMC) of different viscosities.

The Proof is in Performance!

DRILLING SPECIALTIES COMPANY
Bartlesville, Oklahoma

*Driscose is a trademark for Sodium Carboxymethylcellulose.

Coming this spring to celebrate the

The Biggest Show In Oil's History

14TH INTERNATIONAL PETROLEUM EXPOSITION

in Tulsa, May 14-23

World's Largest Meeting Of Oil Technical Men

5th WORLD PETROLEUM CONGRESS

in New York, May 30-June 5

How Oil Men Can Get the Most From Visits to the Two Shows

The two headline events of the petroleum industry's Centennial this year will be the two events shown above.

The Tulsa show is an equipment exposition. More than 1,500 equipment, supply, and service firms will have exhibits—forecast at close to half a billion dollars in value. During the ten days of the show, more than 30,000 different oil men will visit the grounds. Thus, the 14th International Petroleum Exposition (IPE), will be the largest show ever staged by a single industry in U.S. history.

The New York meeting will bring to one building some 4,000 of the oil industry's top scientists, engineers, and research executives. They will hear 285 technical papers, exchange views at special sessions, and view an oil exposition. With delegates from more than 50 nations, the Fifth World Petroleum Congress will be the biggest technical meeting held in the oil industry.

Managers of the two shows are cooperating in their planning to permit oil men from all over the U.S., and from abroad, to attend both shows. For example, the shows

Industry's 100th birthday...

are scheduled to allow oil men a week's travel time between Tulsa and New York.

The following 29 pages comprise a special Petroleum Week service to readers, a depth preview that will permit oil men to derive the most benefit from the two events. It is published now, three and a half months ahead of time, to permit oil men to make their plans carefully and at leisure.

The preview is divided into two parts—Tulsa, then New York. The Tulsa index appears on the next page. The New York index is on page 72.

SHOW MANAGERS William B. Way (left), general manager of the Tulsa Exposition, and C. Eugene Davis, general secretary of the New York Congress, double-check their planning.

Where to Find Tulsa Details . . .

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How Oil Will Celebrate Its Centennial in '59

OIL'S FIRST CENTURY
-BORN IN FREEDOM
WORKING FOR PROGRESS

The Tulsa exposition and the New York Congress this spring will be only two—although the biggest—of hundreds of special events planned by oil men to observe their industry's 100th birthday. It was on Aug. 27, 1859, that the Drake well came in at Titusville, Pa., as the first successful commercial well drilled for oil in the U. S.

The theme for the Centennial is shown on the official logotype at the right. Coordinated by the American Petroleum Institute, oil industry groups of all kinds will be telling the American public about oil's contributions through newspapers, magazines, television, radio, billboards, speeches, movies, demonstrations, exhibits, and special events of all kinds.

National attention will be focused on a Titusville celebration Aug. 27. There will be special Centennial issues of API's reference book, Petroleum Facts & Figures, and of the API Quarterly. The first volume of a two-volume history of the oil industry will be published this year. Most of the oil trade magazines will have special Centennial reports (PETROLEUM WEEK's will be in the May 15 issue).

The U. S. Post Office will issue a commemorative oil centennial stamp, to go on sale at Titusville Aug. 27. And ceremonies are planned for API's annual meeting in the fall to wind up the year's observances.

API is now publishing a newsletter, to keep industry companies informed of Centennial plans and programs, and it is providing a wealth of prepared materials and suggestions on how oil men may carry out Centennial activities on a local level.

An advisory committee of oil company advertising and public relations men is now polishing Centennial plans.

Heading the industry's effort is W. R. Huber, former director of public relations for Gulf Oil Corp. He is serving as API's Centennial Director, with headquarters at 50 West 50th St., New York 20.

$500-MILLION IN OIL EQUIPMENT will be displayed May 14-23 on these permanent grounds of the International Petroleum Exposition, in Tulsa, Okla. This view of the last show, in 1953, looking west, shows large Oklahoma and Kansas buildings at left, Scientific & Technical building in center, and Texas and California buildings at right. Diagram of grounds is on p. 62.

What You'll See at the Tulsa Show

For ten days in Tulsa this spring oil men will have the best chance any businessmen have ever had to catch up with the technological rush of their industry. Some 1,500 different exhibitors will display the latest and best equipment and services in all segments of the petroleum industry.

With equipment valued at half a billion dollars, the 14th International Petroleum Exposition, May 14-23, will be the largest display of industrial equipment ever shown in one place at one time.

The IPE will also represent the largest gathering of oil men, from all parts of the world. Says IPE President W. K. Warren, board chairman of Warren Petroleum Corp., "More than 30,000 men who buy, use, and specify oil equipment and services will be on hand for this celebration of oil's centennial year."

Actual equipment to be shown is still a confidential matter for most of the exhibitors (who are listed starting on p. 62). But oil men will see such items as these:

In Exploration, Drilling and Production Exhibits—The latest in multiple-completion equipment, new well logging devices, designs of offshore drilling rigs, a full-scale turbodrill in actual operation, new slimhole equipment, a working model of the in-situ method of secondary recovery, a sonic pump demonstration, automatic custody transfer systems, miscible-displacement secondary recovery displays, plastic pipe, and dozens of other devices and techniques.

In Refining Exhibits—Displays of catalytic reforming in petrochemicals, automation equipment, radioactive tracers, gas turbines, centrifugal compressors, submerged burners, and process analyzers.

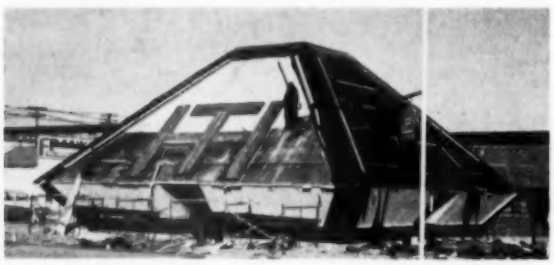
In Pipelining Exhibits—Working model of a remotely controlled pump station, microwave improvements, closed-circuit television used in pump-station control, turbo-charged gas engine, automatic data-handling machines, and new pipe-welding techniques.

In Natural Gas Exhibits—Nuclear energy applications, product control instrumentation, gas liquefaction, storage and gas production techniques. (Because demand for natural gas has grown by more than one-half since IPE's last show in 1953, officials predict gas exhibits will show the largest relative increase in number and size at Tulsa.)

A broad panorama of oil technology will be shown in IPE's expanded Hall of Science. A committee of 75 of the industry's top scientists, headed by George Roberts, Jr., manager of research for Pan American Petroleum Corp., is now at work preparing exhibits that show scientific advances in petroleum. Models or displays in the Hall of Science will cover the impact of electronic computers on all phases of oil operations, in addition to such subjects as the new developments in turbodrilling and percussion drilling, multiple well completions, air and gas drilling, and all kinds of secondary recovery.

IPE, which is spending $1-million for renovating the show grounds, reports that 99% of the exhibit space has been contracted for already. However, since IPE is a nonprofit organization, supported by the exhibitors, officials

HALL OF SCIENCE executive committee meets to decide distribution of space for the May 14-23 Tulsa exposition. Left to right: R. L. Langenheim, University of Tulsa; H. A. Brown, D-X Sunray Oil Co.; J. P. Hammond, Amerada Petroleum Corp.; George Roberts, Jr., Pan American Petroleum Corp., committee chairman; W. B. Way, IPE general manager; T. R. Aude, Service Pipeline Co.; K. T. Kimball, committee executive secretary; John Staudt, Dowell; R. M. Leader, Phillips Petroleum Co.; Stanley Wilcox, Seismograph Service Corp.; and H. J. Schaetti, Jersey Production Research Co.



EARLY CONSTRUCTION by Hughes Tool Co. for 1959 show.

try hard to see that no company that wants space fails to get it. Observes William B. Way, IPE general manager, "We will welcome any request for space, and will do the best we can to fill it. Experience shows that we probably will be able to find some space for any company in the oil business as late as the last of April."

Benefits from Seeing the Tulsa Show

The International Petroleum Exposition offers to the 30,000 oil men who will attend an opportunity to gain valuable information at a minimum of cost. Here, according to men who have been to past shows, are the benefits from making the trip to Tulsa this May. The oil visitor may:

Find out what new equipment is on the market that will help his company operate more efficiently.

Evaluate the comparable equipment of different manufacturers, so he can make sound purchasing decisions.

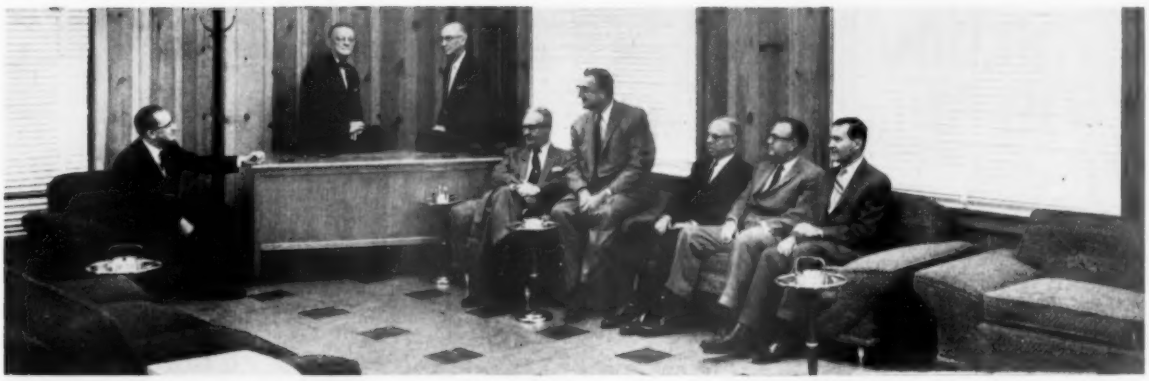
Visit with oil men from all over the world, and take advantage of their knowhow.

Gain a forward look into oil technology by viewing the numerous Hall of Science exhibits.

If he is new to the industry, gain a fast education in integrated oil operations.

22,000-SQ. FT. DISPLAY being planned by Dresser Industries will be one of the largest at IPE this year, and will have all Dresser companies in same building. Going over plans are, left to right: Pat Irwin, Dresser Ideco Co.; and Walter Ender, design consultant.

DESERT TRUCK scheduled for exhibit at Tulsa will be a cab-over-engine model of this giant. To be shipped from Lyons, France, by Automobiles M. Berliet, the 100-ton vehicle will travel overland from a Gulf Coast port, and face many highway and bridge difficulties. Tires alone are more than 7 ft. in diameter. Problems will be minimized by the fact that the truck's per-sq.-in. weight on the road is the same as that of a camel's paw on desert sand (for which the truck was primarily designed). The truck can carry 90 tons of oil equipment, is air-conditioned, and has a speed of 28 mph. Movies of truck in desert will be shown at Tulsa.



SHOW GROUNDS HEADQUARTERS of the Nomads, newly decorated for the International Petroleum Exposition, May 14-23. Shown are members of the IPE Nomad Committee, left to right: Oscar Irizarry, Petroleo Interamericano; Arch F. Campbell, retired, headquarters manager; Don L. Collins, Republic Supply Co., committee chairman; H. M. Cooley, Bethlehem Supply Co.; Ken O. Hoevel, National Supply Co.; R. C. Glover, Baker Oil Tools; G. W. Davidson, W. C. Norris, Manufacturer; and Gilbert Swift, Well Surveys, Inc. The Nomads have mailed out 5,000 invitations.

Nomads to Greet Overseas Oil Men

The large number of oil men expected in Tulsa from foreign countries will be made welcome by the equipment manufacturers in the Nomads.

Says Don L. Collins, chairman of the Nomad Committee for IPE, "We have a growing list of delegates from foreign countries, with close to 700 requests for housing already in."

Among the countries that will be represented are Algeria, Argentina, Austria, Belgium, Bolivia, Brazil, Canada, Chile, China, Colombia, Cuba, Egypt, England, France, Germany, Guatemala, India, Indonesia, Iraq, Italy, Japan, Mexico, Morocco, Pakistan, Peru, Portugal, Russia, Saudi Arabia, Sumatra, Trinidad, and Venezuela.

The number of visitors from abroad may exceed 1,000, with the Western Hemisphere and Europe most heavily represented among the possible total of 50 countries.

The five Nomad chapters in the U.S., in Dallas-Ft. Worth, Houston, Los Angeles, New York, and Tulsa, have about 800 members. The chapters are composed of men in the equipment and supply business who have worked on sales of oil field material and equipment outside the U.S. continental limits. They have mailed 5,000 invitations to oil men abroad.

A building for international visitors will be maintained by the Nomads at the Tulsa show grounds. The oil man registering there will get a large pliofilm badge, with name, company, and country. He will be asked to wear this at all times on the show grounds. Each Nomad will be similarly identified.

A hotel in downtown Tulsa will be designated international headquarters. "We plan," says chairman Collins, "to assign a key man of each delegation to this hotel in order to have a central place to handle any matter or emergency that may arise."

Overseas visitors will be able to get in touch with interpreters through any Nomad. Arrangements are being made with the International Club in Tulsa for the interpreters.

"We suggest," says Collins, "that the foreign guests use the personnel in the Nomad Building during the show hours. After hours, the delegates will be able to phone certain Nomads, whose telephone numbers will be made available. These Nomads will be able to locate interpreters quickly."

The Nomads will offer a travel service at the exposition. This will be equipped with teletype facilities, to help iron out the foreign visitors' travel difficulties (of which there are expected to be many).

About 5,000 letters and forms have been mailed through the Nomads' travel bureau to aid transportation planning. By filling in the forms, oil men can get whatever aid they need in securing reservations and tickets, and in handling foreign exchange. And through the bureau, oil men may make arrangements for space on overseas and U.S. airlines —as well as for flights by chartered planes of any country.

Although formal tours to local plants are not being arranged, the Nomads will make tours possible on a demand basis. Should international visitors want to visit oil or equipment installations in other cities, such as Houston, the Nomads will set up such tours.

For local transportation, the Nomads are assigning four automobiles to international men, with drivers who know the city. These cars will have reserved parking.

To a limited extent, visitors to Tulsa will be able to tie in with the oil tours being arranged in New York in connection with the Fifth World Petroleum Congress (page 86).

On May 20 the Nomads will hold a mammoth cocktail party and buffet at the golf club where the 1958 National Open tournament was held, Southern Hills Country Club. Between 3,500 and 4,000 guests are expected. Tickets are available only through Nomad members.

[Since the party will be held outdoors, it will be postponed until the day following if the weather is rainy on the 20th.]

Through close association with the IPE Housing Bureau, the Nomads are organized to help international oil men find housing.

30,000 Oil Men Expected

Expected to tour the Tulsa show grounds in May are more than 30,000 oil men from all parts of the world. Close to two-thirds will be from the production, drilling, and exploration end of the business (chart). Almost all industry men who attend will be buyers, specifiers, or users of oil field and refinery equipment and services.

The percentage breakdowns in the charts on this page are projected from attendance at the 1953 International Petroleum Exposition. Officials expect a healthy increase over the 28,111 oil men who visited the 1953 show.

This means that non-oil field activities will be represented by large numbers of oil men, even though the percentages will remain small. For example, there should be more than 2,000 refining men at the exposition.

Oil executives and engineers will account for almost two-fifths of the industry attendance. But there will be about 3,000 superintendents and 1,800 foremen. Show officials say that buyer and specifier classifications vary with the particular exhibitor, but may run as high as 92% of the attending oil men.

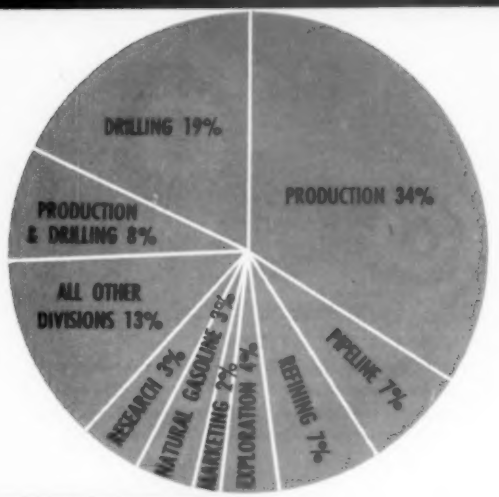
There will be increased foreign-oil flavor at the exposition this year. One reason is the fact that the Fifth World Petroleum Congress (held in New York only a week later) will draw oil men from many countries to the U.S.

The total of foreign visitors may top 1,000. Heaviest delegations should be from Canada and Mexico, but England, France, and Germany should also be well represented. Oil men from more than 50 nations are expected.

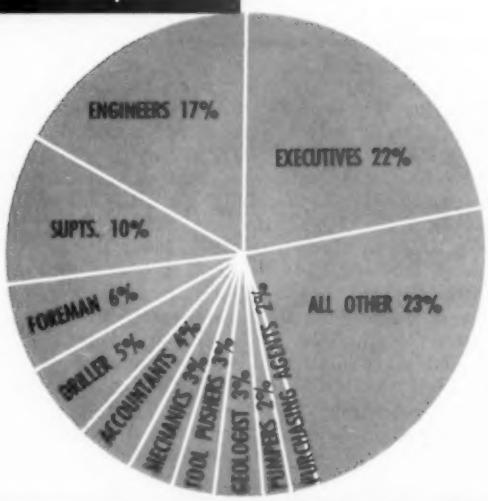
The average oil man going to Tulsa will spend about two days visiting the exposition. And he will spend between five and six hours each day.

The International Petroleum Exposition is staged for oil men—not for the public—and the public is not encouraged to attend. However, in order to avoid barring families and friends of oil men traveling to Tulsa, IPE officials do admit the public.

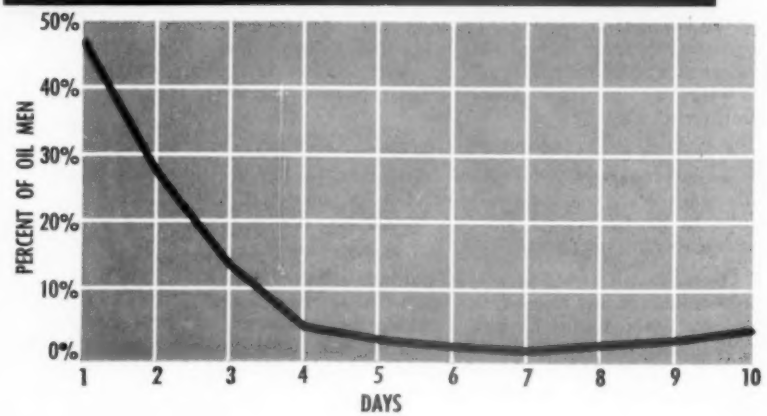
They will represent these segments of the industry . . .

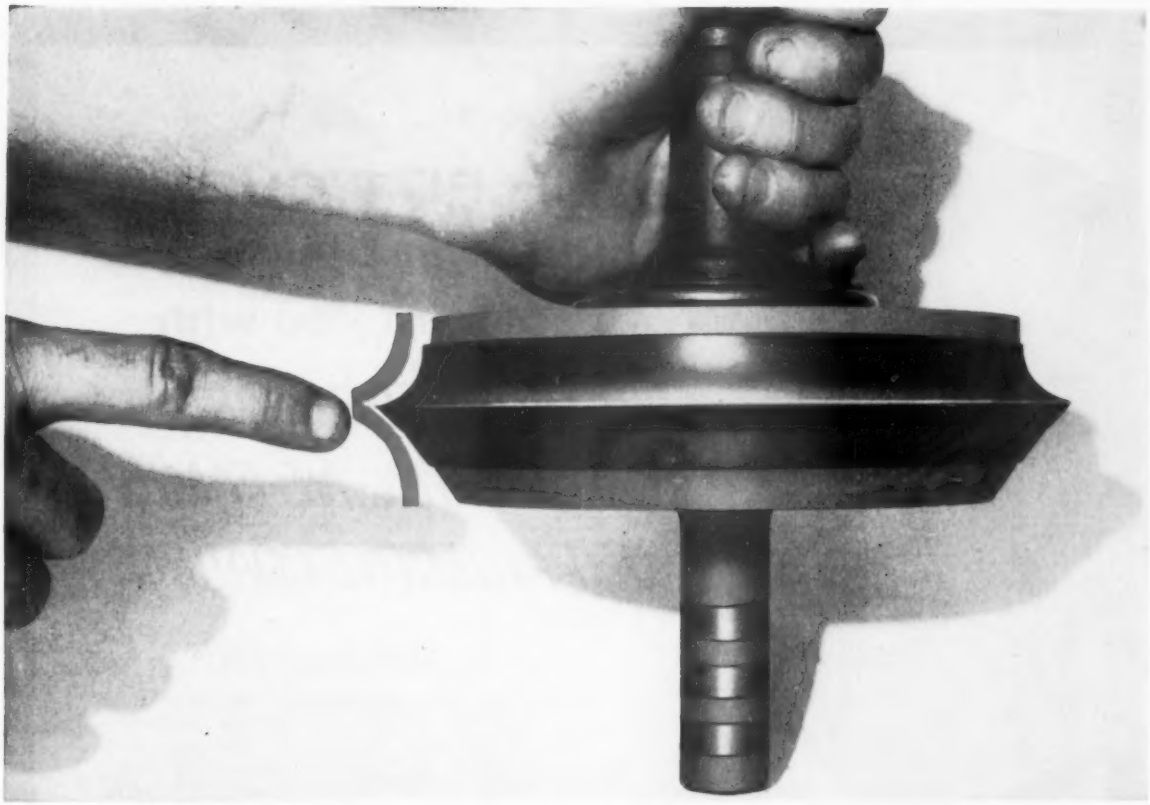


They will hold these jobs . . .



They will spend this much time at the exposition . . .





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Oil's Old-Timers Will Be Honored

Oil men who have made great contributions to their industry will be given special awards at the Tulsa show. IPE will honor eight "Old Timers":

- A "Pioneer of Pioneers"—who will be named on the basis of actual age, length of service, and valuable contributions to the industry as a whole. The candidates must have been active for at least 50 years.
- Seven "Grand Old Men"—who will be named on the basis of actual age and valuable contributions to the industry segment in which the candidate has been active. Forty years' service is the minimum.

Award ceremonies will be held on the show grounds, beside the replica of the Drake Well. Nearby is the Old Timers' headquarters, where oil veterans may congregate, register, and receive a gold lapel pin.

Principal speaker at the gold medal award ceremonies, on May 17, will be Dr. Paul Giddens, president of Hamline University, and former curator of the Drake Museum, Titusville, Pa.

All oil men are urged to submit entries, using the form at the right, or a similar form available from IPE. Deadline is Mar. 1. William Sherry, chairman of the IPE Old Timers Committee, asks that enough information be given so that a fair comparison of candidates may be made.

Woman of the Year

Also to be honored at the Tulsa exposition will be the "oil industry's most outstanding woman," who will be designated "Oil Woman of the Year." The contest to name the winner is being conducted by the Assn. of Desk & Derrick Clubs of North America. Nominations may be made through any member club, with the deadline Mar. 31. The winner will receive an expense-paid trip to IPE, an engraved certificate, a diamond wrist watch, and a banquet in her honor.

How to Vote for 'Grand Old Men'

Mr. William J. Sherry, Chairman
IPE Old Timers Committee
Box 5205, Donaldson Station
Tulsa, Oklahoma

I would like to nominate_____

whose mailing address is_____

City_____ State_____

for the International Petroleum Exposition award checked below.

- ___ Pioneer of Pioneers
- ___ Grand Old Man of Production
- ___ Grand Old Man of Drilling
- ___ Grand Old Man of Refining
- ___ Grand Old Man of Pipe Line and Transportation
- ___ Grand Old Man of Natural Gasoline
- ___ Grand Old Man of Natural Gas
- ___ Grand Old Man of Supplies & Equipment

Please attach background information on your nominee.

My name is:_____

Address: _____

Note: More detailed entry blanks are available from Mr. Sherry at the Tulsa address above.

Desk & Derrick Will Be Active

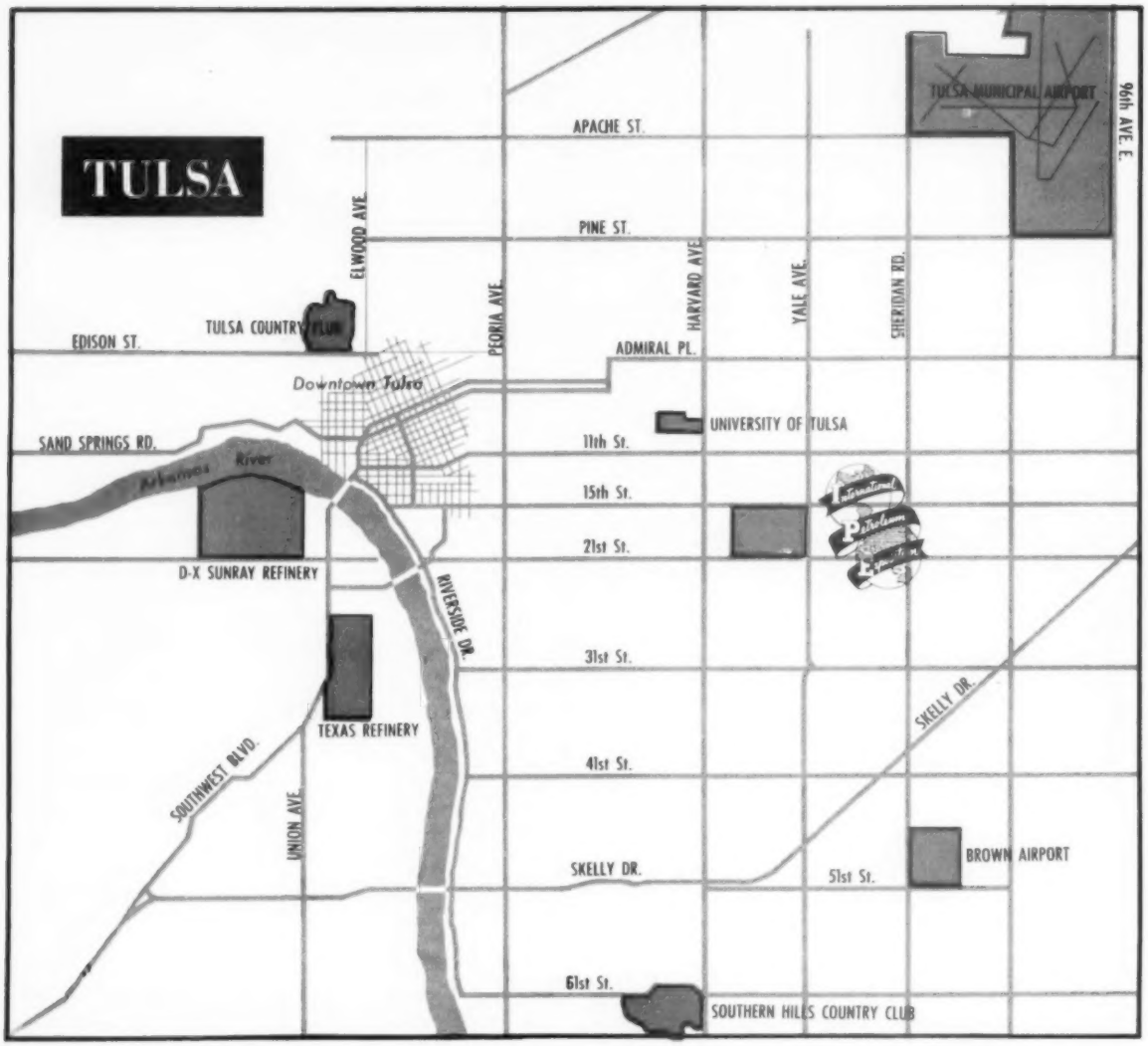
Ruth Burris
IPE Women's Chairman

Women's activities at the Tulsa exposition will be developed between now and May. Oil women in the Desk & Derrick Club will serve in the housing information booths. They will sell exposition novelties on the show grounds. And they will direct the Oil Woman of the Year contest. Coordination of these and other women's programs will be led by Mrs. Ruth Burris, as chairman of Desk & Derrick Club activities for the Tulsa show. A former president of the Tulsa chapter of Desk & Derrick, Mrs. Burris is with Kantor Oil Co., Tulsa.

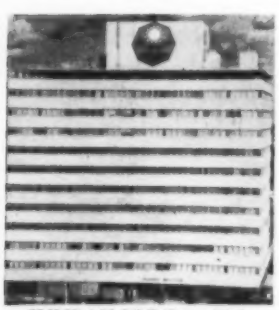
Have a Question?

Full information on the Tulsa oil show, May 14 through 23, may be obtained from:
William B. Way
General Manager
International Petroleum Exposition
P. O. Box 5205
Donaldson Station,
Tulsa, Oklahoma
Phone: WEbster 9-4421

Housing information is available from:
Anthony F. Keating
Chairman
Housing Bureau
International Petroleum Exposition
507 South Main
Tulsa, Okla.
Phone LUther 5-8118



Oil Center with Energy and Beauty



SUNRAY BLDG. in Tulsa.

Tulsa's claim to the title "Oil Capital of the World" is based on intense activity in all phases of the oil business.

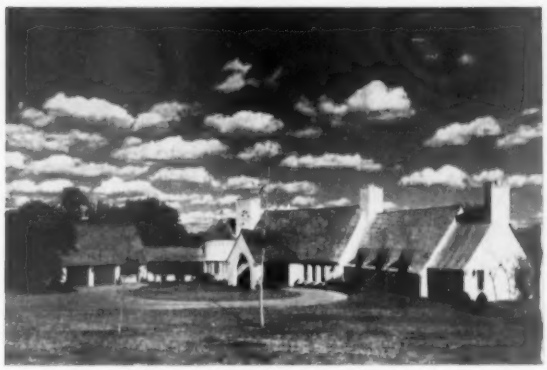
In the heart of the Mid-Continent oil country, the city has more than 30,000 citizens working in various phases of petroleum. These employees have a total annual payroll of $70-million.

Close to a third of the oil people are engaged in handling the huge amount of detail work involved in oil-production control. Tulsa has nearly 800 companies—independents and majors—in various oil operations.

An important oil research center, Tulsa also has two large refineries—those of D-X Sunray Oil Co. and The Texas Co.

The city is growing fast. Population has climbed from 182,000 in 1950 to 264,000 today, and there is a steady increase in manufacturing and wholesaling.

Tulsa is a beautiful city, with many new buildings, trees, parks, gardens, and golf courses. For its size, it is advanced in art, the theater, and music. For example, Tulsa has one of the country's major symphony orchestras, and a year-round symphony program.



OIL MEN'S HOMES in greater Tulsa, some of the nation's finest residences, will house many guests during the oil show.

ROOMS FOR RENT during the Tulsa show will be available at many private homes, such as these near the exposition grounds.

Tulsa Homeowners Ease Hotel Jam

The way to get housing for the Tulsa show is to contact the IPE office handling reservations. It not only controls room assignments to hotels, but is arranging rentals with the hundreds of Tulsa residents who are opening their homes to oil men. The man to contact:

Anthony F. Keating, Chairman
IPE Housing Bureau
507 South Main Street
Tulsa, Okla.
Telephone: Luther 5-8118

All hotels in the city have been made available to the bureau, so that at this date there is no point writing hotels directly for room reservations.

The 21 leading motels in the Tulsa area are already filled to capacity for the dates of the oil show. These motels are not under IPE direction. Because of the shortage of rooms, the general public is being warned to avoid Tulsa May 14-23.

Enough private homes will be available to handle the exposition demand, with rates, per bed, ranging from $8 to $15 a day. (Typical of the homes with rooms for rent are those shown in the pictures above.)

Oil men who notify the IPE bureau of their housing needs will receive a reservation by mail. This will be held for ten days, pending receipt by the homeowner of a check for at least one night's rental. Arrangements for meals and laundry should be made directly with the homeowner.

Tulsa Weather? Flip a Coin

Oil men in Tulsa for the exposition may expect almost any kind of weather. The city has had mid-May temperatures as high as 94F and as low as 47F.

Average temperatures for the whole month of May have been as high as 79F and as low as 58F.

There's a good chance there will be some rain during the show. Average rainfall for the month is 4.77 in.

How to Get to Tulsa—and to the Exposition Grounds

The airlines serving Tulsa say they will try to accommodate all persons wishing air service for the IPE. American Airlines, Braniff International Airways, Central Airlines, Continental Airlines, and Trans World Airlines offer passenger service to and from most cities in the U.S., Mexico, South America, Europe, and Asia.

Railroads able to handle passenger business from any point to Tulsa are the Atchison, Topeka & Santa Fe, and the St. Louis & San Francisco lines. They will operate special trains from key cities to Tulsa. Limited space will be available in Pullman cars for lodging purposes in Tulsa during the exposition. Passenger representatives of the lines in principal cities should be consulted for information.

Local bus service to the exposition grounds will be provided by MK&O Transit Lines at 30-minute intervals during the show. Originating at 4th and Main Streets, in downtown Tulsa, the buses will run south on Main, and then east to the exposition grounds on both 15th and 21st Streets.

Bus lines that provide frequent direct service, and connecting line services, from all points in the U.S. to Tulsa include the American, Arkoma, Continental Trailways, Greyhound, MK&O, and Union Transportation lines.

Car rental in Tulsa will be available from Avis Rent-A-Car System, Harris Rent-A-Car, Hertz Rent-A-Car, Fred Jones Leasing Co., Manring-Heath Leasing Co., National Car Rental System, and Tulsa Auto Rental. Rates will range from $10 a day plus 10¢ a mile (for light cars) to $15 a day plus 15¢ a mile (for heavy cars).

Taxicabs in Tulsa have meters based on these rates: 40¢ for the first half-mile, 10¢ for each additional two-fifths of a mile, and 10¢ for each additional passenger. Waiting time is $3 an hour. Passenger limit is five per cab.

Where to Dine and Be Entertained

Much of the entertainment in Tulsa during the IPE will be privately paid for and planned. The various supper and night clubs in the Tulsa area will have special shows.

The Petroleum Club of Tulsa will continue during the exposition its policy of honoring reciprocal arrangements with other petroleum clubs, despite the fact the Tulsa club's facilities will be taxed.

Private Clubs in Tulsa

After Five Club,
125 E. 3, LU 3-5252

Harvard Club,
2717 S. Harvard, RI 2-6771

Petroleum Club,
618 S. Main, GI 7-3138

Tulsa Club,
Tulsa Bldg., GI 7-5121

Restaurant Sampler

Bishop's Restaurant, 512 S. Main. Open 24 hours a day. Tulsa's downtown meeting place.

Eddy's Restaurant, 2705 S. Harvard. Broiled steaks, Syrian dishes.

Jamil's, 2905 E. 51. Thick hickory-grilled steaks, Syrian dinners.

Lola's Restaurant, 246 W. 11. Pizza, seafood, spaghetti, steaks.

Louisianne, 118 E. 18. Seafood, steaks, chicken, oysters, lobsters.

Pierre Restaurant, 3301 S. Harvard. Excellent steak and cuisine. Dancing and entertainment nightly.

Villa Venice Restaurant, 6625 S. Lewis. Continental cuisine.

Western Village Dining Room, east of city. Well-regarded "Golden Butter Knife" steaks.

Club Casbah, 3949 E. Admiral Place. Broiled steaks, lobster tails, fried chicken, Cantonese dinners. Dancing and entertainment nightly.

Country Clubs

Meadowbrook Country Club, 81 and S. Memorial Drive, RI 3-1030.

Oaks Country Club, southwest of city, HI 6-6161.

Osage Hills Country Club, 1800 N. McKinley, Sand Springs, CI 5-9528.

Rolling Hills Country Club, east of city, VE 4-2249.

Southern Hills Country Club, 61 and S. Lewis, RI 2-3351.

Tulsa Country Club, 800 N. Country Club Drive, LU 5-8153.

Woodland Country Club, 4000 N. Memorial Drive ,TE 5-1529.

Tulsa Addresses and Phone Numbers

Tulsa is the headquarters or division office city for many petroleum firms of all sizes, including producers, drilling contractors, pipeline companies, and many equipment and supply firms.

Among the larger oil companies with offices in Tulsa are:

Carter Oil Co.
National Bank of Tulsa Building
Cherry 2-6101

Gulf Oil Corp.
Gulf Building
Luther 7-2121

Pan American Petroleum Corp.
Pan American Building
Cherry 2-3211

Research Center
41 and Yale
Riverside 2-2481

Shell Oil Co.
Shell Building
Diamond 3-7101

Production Laboratory
5014 E. Admiral Place
Temple 5-6338

Sinclair Oil & Gas Co.
909 S. Boston
Luther 4-0411

Skelly Oil Co.
Skelly Bldg.
Cherry 2-2131

Sun Oil Co.
Petroleum Building
Luther 5-8131

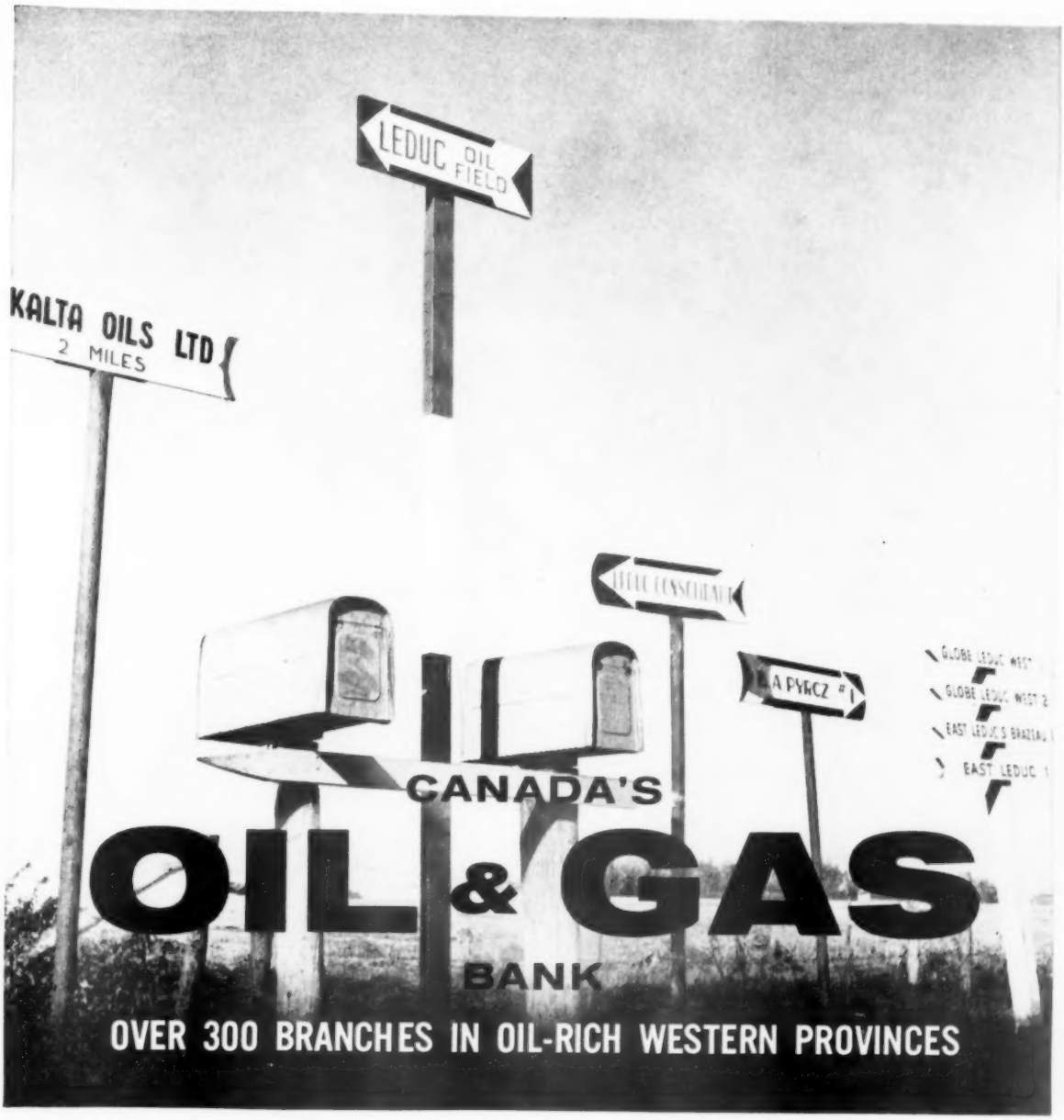
D-X Sunray refinery
West Tulsa

Sunray Mid-Continent Oil Co.
907 S. Detroit
Luther 7-6561

The Texas Co.
Philtower Building
Diamond 3-4101

Tidewater Oil Co.
Thompson Building
Cherry 2-3161

Warren Petroleum Corp.
1350 S. Boulder
Luther 4-7121



Why has Canada's largest bank, the Royal, earned its reputation as Canada's "Oil and Gas Bank"? For one thing, it operates over 300 branches throughout the oil and gas rich Western provinces, each able to supply all the banking facilities you are likely to need. For another, a special Oil and Gas Department in Calgary, staffed by experienced "oil bankers," is exceptionally well organized to provide information and practical assistance to oil and gas men.

This department's Special Bulletin Service can be of great assistance to those interested in entering the industry as well as those already established. For an up-to-date list of Oil and Gas bulletins, covering regulations, tariffs, statistics, financing and other related topics, write The Royal Bank of Canada, Oil and Gas Department, 409 Eighth Ave. W., Calgary, Alta.

THE ROYAL BANK OF CANADA

Head Office: Montreal

New York Agency—68 William Street, New York 5, N. Y.

Dallas Representative—H. E. McClenaghan, 1523 Republic Bank Bldg.

Over 900 branches in Canada, The Caribbean Area and South America • Offices in New York, London and Paris • Correspondents the world over

Total Assets Exceed 4 Billion Dollars

It's New ...another first from REED !

FLUSH-FLO

THE MOST IMPORTANT ADVANCEMENT IN MODERN BIT DESIGN...

The Reed Jet Y Bit With Flush-Flo Design Is The Only Rock Bit That Gives You All These Advantages—

1. *50% more return circulation area. Faster removal of cuttings.*
2. *Minimizes hole erosion.*
3. *Automatic self-cleaning in bit head and over teeth.*
4. *Reduced bottom hole pressure. More effective jets.*
5. *Improved hydraulics.*
6. *50% less swabbing action when pulling string.*
7. *Cutter teeth are drilling on new formation (not old cuttings) at all times.*

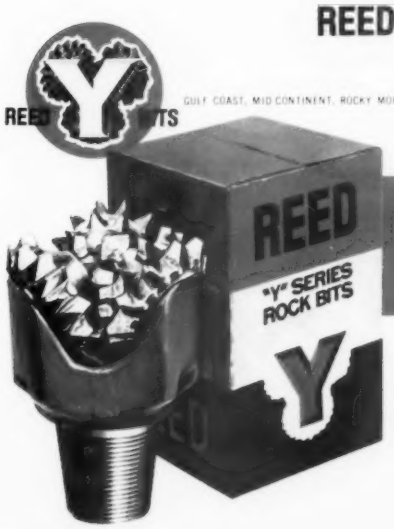
Contact the Reed man that services your well for the full story on Reed Jet Y bits. He can also help you with your everyday problems where you use conventional pump pressures and mud volumes. The regular Reed Y bit and the Reed Jet Y bit will get you down hole faster in any formation.

REED ROLLER BIT COMPANY

Houston 1, Texas

EXPORT OFFICE: 1011 INTERNATIONAL BLDG., NEW YORK 20, N.Y.

GULF COAST, MID CONTINENT, ROCKY MOUNTAIN AND CANADIAN DISTRIBUTOR FOR MARTIN DECKER PRODUCTS



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REED'S ROLLIN'

New type
DRILLING PLATFORM
. . . GOES "ON LOCATION" FOR ARAMCO
First Mobile Tender-Assisted Platform Makes Debut in Persian Gulf

The new LeTourneau mobile platform, "Aramco Mobile Drilling Platform No. 1," introduces another money-saving advancement to the offshore drilling industry. This self-elevating platform, used with Aramco's tender "Queen Mary," can be moved quickly from location to location . . . saving the time and cost of building a permanent structure each time.

The Aramco platform was built at our Vicksburg, Mississippi plant and towed to the Persian Gulf. Another LeTourneau tender-assisted platform, built for another company, will soon be operating in the Persian Gulf. While similar in design to the larger self-contained LeTourneau mobile platforms, these tender-assisted units carry a minimum of equipment other than derrick and drawworks. The remainder of the equipment needed for drilling is carried aboard the tender.

In offshore operations around the world, big self-contained and smaller tender-assisted LeTourneau mobile platforms are building a reputation for efficient performance at lower operating costs. Each platform is built to meet specific requirements of the operating company. For detailed information, without obligation, send in the coupon below.

SEND FOR YOUR FREE COPY OF "OCEANS OF EXPERIENCE"
Detailed information on LeTourneau Mobile Platforms

LeTOURNEAU EQUIPMENT

R. G. LeTOURNEAU INC

2851 South MacArthur • LONGVIEW, TEXAS

Gentlemen: Please send me my free copy of "Oceans of Experience"

NAME _____ TITLE _____

COMPANY _____ ADDRESS _____

CITY _____ STATE _____

M115

These Men Are Running the Show

The 16 oil men and exposition specialists on this page are playing leading roles in planning the International Petroleum Exposition in Tulsa May 14-23, which will be the largest show ever held by a single industry.

WILLIAM K. WARREN
President
International Petroleum Exposition

WILLIAM B. WAY
IPE General Manager

GEO. ROBERTS, JR.
Chairman
IPE Scientific & Technical Committee

DR. A. I. LEVORSEN
Chairman
Exploration Day at IPE

A. W. THOMPSON
Chairman
Drilling Day at IPE

JAKE L. HAMON
Chairman
Production Day at IPE

REID BRAZELL
Chairman
Refining Day at IPE

J. L. IRVIN
Chairman
Pipeline Day at IPE

CHAS. E. WEBBER
Chairman
Natural Gasoline Day at IPE

JOHN F. MERRIAM
Chairman
Natural Gas Day at IPE

WM. J. SHERRY
Chairman
IPE Old-Timers Committee

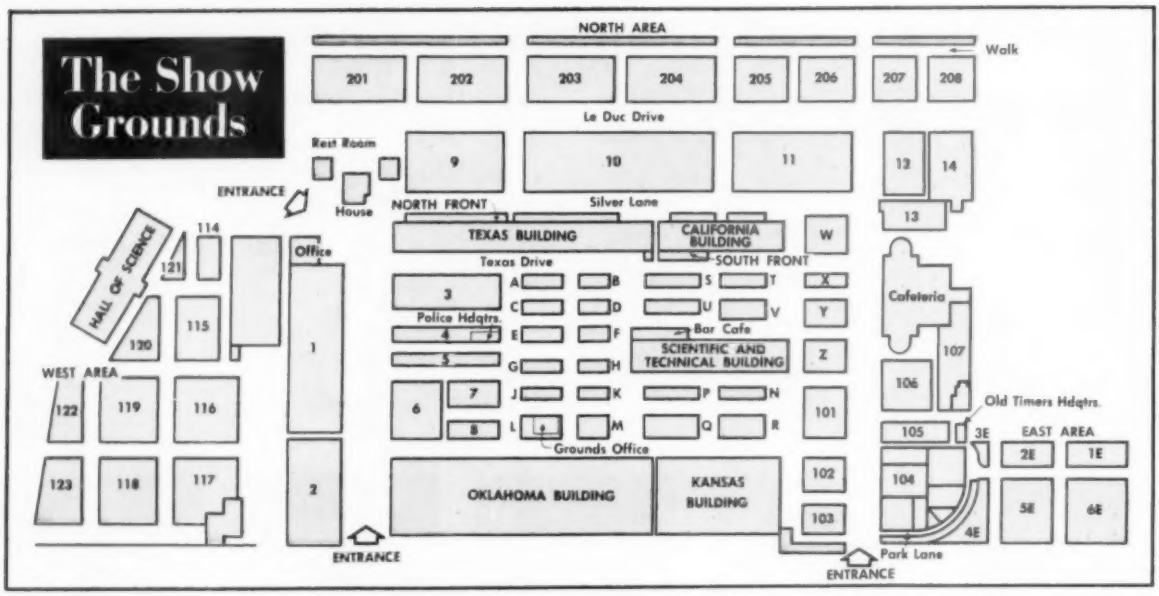
D. A. BRIDENTHAL
IPE Assistant General Manager

A. F. KEATING
Chairman
IPE Housing Committee

S. J. RAPHEL
Manager
IPE Housing Bureau

LESLIE BROOKS
IPE Publicity Director

H. B. BABER, JR.
IPE Assistant Publicity Director



These Firms Will Be Exhibitors

More than 1,500 companies are expected to have exhibits at the Tulsa exposition. On the following pages is the official IPE list (as of presstime) of primary exhibitors, showing locations on the diagram above.

A

Abegg & Reingold Co.
Booths 3-5, Silver Lane
Acme Fishing Tool Co.
Booths 47-48 California Bldg.
Acme-Newport Steel Co.
Booth 77N, North Area
Adams Pipe Repair Products
Booth 56, Oklahoma Bldg.
Aeroquip Corp.
Booths 138-191, Oklahoma Bldg.
Aerotron Radio Co.
Booth 29N, North Area
Airetool Mfg. Co.
Booths 151-152, Oklahoma Bldg.
Air Reduction Sales Co.
Booths 30-31
Albina Engine & Machine Works
Booths 5N-6N, North Area
Aldrich Pump Co.
Booths 30-31, California Bldg.
Allen Edwards, Inc.
Booths 1-6, California Bldg.; Booths 5-6, S & T Bldg.
Allen Gauge & Tool Co.
Booth 64, Kansas Bldg.
Allied Bearings Supply Co.
Booths 1-2, S & T Bldg.
Allied Chemical & Dye Corp.
Booth 52, Kansas Bldg.
Allied Paint Mfg. Co.
Booth 259, Oklahoma Bldg.
Louis Allis Co.
Booths 48-49, Kansas Bldg.
Allis-Chalmers Mfg. Co.
50' x 60', Block M
Alten Foundry & Machine Works
25'x40', Block L
Aluminum Co. of America
Booths 52-55, S & T Bldg.
American Air Filter Co.
Booths 16-17, Texas Bldg.
American Airlines
10' x 10', No. Front of Texas Bldg.
American Assn. of Oilwell Drilling Contractors
Booth 45, Texas Bldg.
American Bosch Arma Corp.
Booths 34-35, Oklahoma Bldg.; 9' x 27' East of Grounds Office
American Brass Co.
Booths 55-56, Texas Bldg.
American Chain & Cable Co.
Booths 156-158, 173-175, Oklahoma Bldg.
American Coleman Co.
23' x 30', North of Block 12
American International Underwriters
Booth 239, Oklahoma Bldg.
American Iron & Machine Works
Booths 159-161, Oklahoma Bldg.
American Kloeckner-Moeller Corp.
Booths 35N-36N, North Area
American Mannex Corp.
45' x 30', Block 5
American Meter Co.
Booths 45-46, 57-58, S & T Bldg.
American Petroleum Institute
Booth 50, S & T Bldg.
American Pullmax Co.
Booths 5-6, Park Lane
American Recording Chart Co.
Booths 179-180, Oklahoma Bldg.
American Roller Bearing Co.
Booths 20-21, Silver Lane
Ampco Metal, Inc.
Booths 32-34, California Bldg.
Ansul Chemical Co.
Booth 24, Silver Lane
V. D. Anderson Co.
Booths 47-48, S & T Bldg.
Arunson Machine Co.
Booth 85, Kansas Bldg.
Arcair Co.
Booths 28-29, Kansas Idg.
Armco Steel Corp.
26' x 46' Block R
Armstrong Machine Works
Booth 32, Texas Bldg.
Arrow Industrial Mfg. Co.
Booths 18-19, S & T Bldg.
Asphalt Refiners Assn.
Booth 225, Oklahoma Bldg.
Associated Publishers, Inc.
Booths 3-256, Oklahoma Bldg.
Austin-Western
23' x 60' So. of Block 201, North Area
Automobiles M. Berliet
23' x 115' North of Block 12
Axelson Manufacturing Co.
25' x 50' Block 104

B

Baash-Ross Div. Joy Mfg. Co.
Booths 24-26, Texas Bldg.
Baker Oil Tools
Booths 99-102, 109-112, Oklahoma Bldg.
Band-It Co.
Booths 82-129, Oklahoma Bldg.
Barber-Coleman Co.
Booth 2, Texas Drive
Barco Mfg. Co.
Booths 83-84, Kansas Building
Baroid Division National Lead Co.
25' x 40' Block 8; Booths 83-84; 127-128,

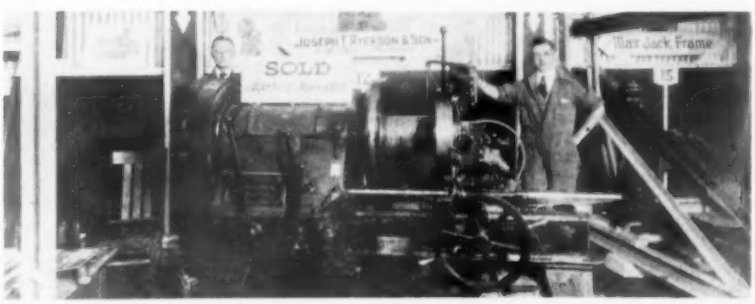
Oklahoma Bldg.
Beckman Process Instruments Division
Booths 49-50, Texas Bldg.
Beech Aircraft Corp.
60' x 100' Block 123, West Area
Bell Corp.
Booth 12, Silver Lane
Bellows Co.
Booth 4N, North Area
Bendix Aviation Corp.
Booths 34-36, Kansas Bldg.
Bendix Aviation Corp., Scintilla Division
Booths 9-10, Oklahoma Bldg.
Bendix Westinghouse Automotive
Booths 74N-75N, North Area
Berry Hydraulics
Booth 39, Oklahoma Bldg.
Bestwall Certain-Teed Sales Corp.
Booth 7N, North Area
Bethlehem Supply Co.
131' x 90', Block 9
The Bettis Corp.
Booths 60-61, S & T Bldg.
The Bettis Rubber Co.
Booth 1, Park Lane
Big Three Welding Supply Co.
Booths 189-190, Oklahoma Bldg.
B. J. Service, Inc.
30' x 80', Block 204, North Area
Blackhawk Mfg. Co.
Booth 76N, North Area
Black, Sivalls & Bryson
Booths 39-43, 62-66, Calif. Bldg., 60' x 75', Block 208, North Area
Bonney Forge & Tool Works, Pennsylvania Div.
Booths 32-33, Oklahoma Bldg.
Bos-Co.
20' x 20', Block 208, North Area
Bovaird Supply Co.
67' x 80', Block 1
Bowen-Itco, Inc.
24' x 90', Block V
Bowser, Inc.
25' x 40', Block 205, North Area
Brakesol, Inc.
Booth 78, S & T Bldg.
Braniff International Airways
10' x 20', North side of Office
Branson Instruments
Booth 17, Silver Lane
Brewster Co.
55' x 90', Block 10
Briggs & Stratton Corp.
Booths 13-14, Oklahoma Bldg.
Ralph H. Brodie Co.
Booth 54, Calif. Bldg.
Brown Instruments Division of Minneapolis Honeywell Regulator Co.
Booths 41-43, S & T Bldg.
Brown Oil Tools
Booths 59-60, Texas Bldg.
Charles Bruning Co.
Booths 62-63, Kansas Bldg.
Bucyrus-Erie Co.
30' x 65' Block 4; 38' x 75' Block 1E
B & W Inc.
Booths 2-3, Park Lane
G. T. Bynum Co.
20' x 23' South of Block 204, North Area
Byron Jackson
Booths 208-210, Oklahoma Bldg. 20' x 70' in Block 102

C

Cabot Shops, Inc.
42' x 30', Block F, 60' x 70' Block Z
Cal-Metal Pipe Corp. of Louisiana
Booth 80, Kansas Bld.
Camco Inc.
Booths 198-200, Oklahoma Bldg.
Cameron Iron Works
2—8' x 8' outside North Door of Oklahoma Bldg.; 50' x 74' Block 115, West Area
Cardwell Manufacturing Co.
50' x 90' Block Q, 70' x 50' Block R, 30' x 50' Block N
Caterpillar Tractor Co., Sales Development Division
30' x 80' Block C, 30' x 80' Block E
C & D Batteries, Inc.
Booth 72, S & T Bldg.
Cemco Industries, Inc.
Booth 31, Kansas Bldg.
Cessna Aircraft Co.
38' x 100' Block 2E East Area
Chain Belt Co.
Booths 99-100, 111-112, Texas Bldg.
Cherokee Steel, Inc.
30' x 40' Block 205 North Area
Chicago Bridge & Iron Co.
Booths 85-86, 125-126, Texas Bldg.
Chicago Pneumatic Tool Co.
33' x 70' Block W
Chiksan Co.
Booths 108-110, Texas Bldg.
Christensen Diamond Products Co.
Booths 1-2, Silver Lane
Christian Science Monitor
Booth 6, Texas Drive
Chrysler Corp.
Industrial Engine Division
25' x 75' Block 104
Dodge Division Chrysler Corporation
50' x 100' Blo 118 West Area
Chromium Plating Co.
Booth 25, Kansas Building
Clark Equipment Co.
100' x 100' Block 119 West Area
Clayton Mark & Co.
Booths 51-52, Oklahoma Bldg.
Cleveland Trencher Co.
30' x 40' Block P
Clevite Corp., Texas Div.
Booths 32N-34N, North Area
Collins Radio Co.
Booth 41, Oklahoma Bldg.
Continental-Emsco Co.
85' x 100' Block 6, 25' x 40' Block 8, 50' x 50' Block 7
Continental Motors Corp.
30' x 50' Block P
Continental Products Corp.
Booth 46, Texas Bldg.
Control Panel Corp.
Booth 37N, North Area
C. Lee Cook Co.
Booths 51-52, Texas Bldg.
Colorado Fuel and Iron Corp.
Booths 162-165, Oklahoma Bldg.
Continental Air Lines
10' x 10' So. Front of Texas Bldg.
Cook Machinery Co.
Booth 38, Texas Bldg.
The Cooper Bessemer Corp.
30' x 50' Block G
Fred E. Cooper, Inc.
40' x 30' Block A, 30' x 60' Block B, 30' x 60' Block D
G. A. Cotten
Booth 7, S & T Bldg.
Coynco Products, Inc.
Booths 63-64, S & T Bldg.
Croll Products, Inc.
Booths 50N-51N, North Area
Crane Carrier Corp.
30' x 80' Block 205, North Area
Crane Co.
Booths 196-197, 254-255, Oklahoma Bldg.
Crane Packing Co.
Booths 17N-18N, North Area
M. J. Crose Mfg. Co.
40' x 100' Block 116, West Area
Cummins Engine Co.
100' x 100' Block 5E, East Area
Cummins Sales & Service
100' x 50' Block 13
W. H. Curtin & Co.
Booths 79-80, S & T Bldg.
Curtiss-Wright Corp., Utica Division
30' x 30' Block 202 North Area

D

Darling Valve & Mfg. Co.
Booths 113-114, Oklahoma Bldg.
Davey Compressor Co.
50' x 50' Block 122, West Area
Davey, Paxman & Co., Ltd.
25' x 40' Block 205, North Area
Dayton Rubber Mfg. Co.
Booths 211-240, Oklahoma Bldg.
De Laval Steam Turbine Co.
Booths 8-9, Texas Drive
Denison Engineering Co.
Booths 23-24, Kansas Bldg.
Dia-Log Co.
Booths 26-28, S & T Bldg.
Diamond Chain Co.
Booths 11-12, S & T Bldg.
Diesel Energy Corp.
23' x 40' So. of Block 201, North Area
Eugene Dietzgen Co.
Booths 235-236, Oklahoma Bldg.
Double Seal Ring Co.
Booth 52, California Bldg.
Dow Chemical Co.
Booth 26, Silver Lane
Dow Corning Corp.
Booth 33, Kansas Bldg.
Dowell
48' x 80' Block Y
Dresser Engineering Co.
Booths 39-40, S & T Bldg.



IN THE 20's, drilling equipment, such as these drawworks, featured IPE shows.

Dresser Industries, Inc.
197' x 90' Block 11; 197' x 23' North of Block 11
Drilco Oil Tools
Booth 27, Texas Bldg.
Drillrel
Booth 83N, North Area
Drilling Equipment Mfg. Co.
Booths 26-27, Calif. Bldg.
Duff-Norton Mfg. Co.
Booth 155, Oklahoma Bldg.
Bob Dunning-Jones, Inc.
Booths 18-19, Park Lane
Duralectric Corp.
Booths 261-262, Oklahoma Bldg.
D-X Sunray Oil Co.
Booths 47-46, 58-59, Kansas Bldg.

E

Eastman Oil Well Survey Co.
Booths 44-59, S & T Bldg.
Eaton Mfg. Co.
23' x 45' south of Block 202
Eclipse Fuel Engineering Co.
Booth 71N, North Area
Eggelhof Engineers, Inc.
Booths 169-170, Oklahoma Bldg.
Eisenwerk Wuelfel
30' x 80' Block 202, No. Area
Elliott Co.
Booths 125-126, Oklahoma Bldg.
Emerol Mfg. Co.
Booths 60-62, Oklahoma Bldg.
Emerdo Mfg. Co.
Booths 257-258, Oklahoma Bldg.
English Electric Export & Trading Co.
Booths 13-14, Park Lane
Ensign Carburetor Co.
Booth 194, Oklahoma Bldg.
Equipto Division of Aurora Equipment Co.
Booths 47N-48N, North Area
Ethyl Corp.
Booths 127-128, Kansas Bldg.

F

George E. Failing Supply Co.
55' x 90' Block 10
Fairbanks, Morse & Co.
50' x 40' Block 203, North Area
Fawick Airflex, Division of Fawick Corp.
Booth 53-54, Texas Bldg.
Femco, Inc.
Booth 17, Kansas Bldg.
Fenway
Booth 40N, North Area
Firestone Tire & Rubber Co.
61' x 44' Block 117, West Area
First National Bank & Trust Co., Tulsa
24' x 24' North of Office
Fischer & Porter Co.
Booths 64N-66N North Area
Edwin H. Fitler Co.
Booth 4, Texas Drive
Flint Steel Corp.
Booths 80-81, Oklahoma Bldg.
Fluid Packed Pump Co.
37½' x 43½' Block 114, West Area
Flo-Bend, Inc.
Booth 78, Kansas Bldg.
Fluid Power Corp.
Booths 28-29, Oklahoma Bldg.
Fluor Products Co.
Booths 11-12, Park Lane
Ford Motor Co., Fleet Sales Division
100' x 100' Block 6E East Area
Foster Cathead Co.
Booths 12-13, Texas Bldg.
Foster Engineering Co.
Booth 88N, North Area
Four Wheel Drive Auto Co.
30' x 40' Block N, 25' x 30' East of Block N
Fram Corp.
Booth 49, California Bldg.
France Packing Co.
Booth 72, Texas Bldg.
Franklin Supply Co.
30' x 70' Block X
Franks Division Cabot Shops
60' x 70' Block Z
Franks Machine Co.
22½' x 30' Block 104

G

Gardner Denver Co.
50' x 80' Block 203, North Area; 23' x 80' North of Block 10
Garrett Oil Tools
25' x 50' Block 104
Gaso Pump & Burner Mfg. Co.
33' x 70' Block W
Gates Rubber Co.
Booths 9-10, Texas Bldg.
Gem Oil Tool Co.
Booth 56N, North Area
General American Transportation Co.
Booths 5-6, Oklahoma Bldg.
General Controls Co.
Booths 12-13, Calif. Bldg.
General Electric Co. (Carboloy)
Booth 39N, North Area
General Electric Co.
Booths 241-244, Oklahoma Bldg.
General Mills, Inc.
Booths 15N-16N, North Area
General Motors Corp.
200' x 90' Block 10
General Valve Co.
Booths 86-87, Kansas Bldg.
Geolograph Co.
Booth 49, S & T Bldg.
Geophysical Research Corp.
Booth 51, S & T Bldg.
B. F. Goodrich Co.
Booth 76, Kansas Bldg.
Gorman-Rupp Co.
12' x 34' NE of Calif. Bldg.
Goulds Pumps, Inc.
Booths 252-253, Oklahoma Bldg.
Granberg Corp.
Booth 30, Kansas Bldg.
Graver Tank & Mfg. Co.
Booths 74-75, Kansas Bldg.
Gray Tool Co.
Booth 15, Texas Bldg.
John A. Green Co.
Booths 167-168, Oklahoma Bldg.
Gatke Corp.
Booths 23-25, Calif. Bldg.
Gripholst, Inc.
Booth 11N, North Area
Grip-Strut Div. of Globe Co.
Booths 93N-94N, North Area
Grip-Tite Mfg. Co.
Booth 31, Silver Lane
Grove Valve & Regulator Co.
Booths 36-37, Texas Bldg.; 10' x 12' adjacent to Booth 30, Silver Lane
Gruner & Co.
Booths 24N-25N, North Area
Gulf Coast Machine & Supply Co.
Booths 7-8, Park Lane
Gulf Publishing Co.
Booths 149-150, 181-182, Oklahoma Bldg.
Gustin-Bacon Mfg. Co.
Booth 27, Silver Lane
G & W Electric Specialty Co.
Booth 32, Silver Lane

H

Hagan Chemicals & Controls
Booths 83-84, S & T Bldg.
Hale Mfg. Co.
Booth 95, Oklahoma Bldg.
Halliburton Oil Well Cementing Co.
30' x 60' Block K, 20' x 30' East of Block K, 9' x 30' West of Block K
Happy Co.
22' x 24' West of Block U
Harbison-Fischer Mfg. Co.
Booths 10-11, Kansas Bldg.
Hardy-Griffith Engineering Corp.
Booths 127-128, Texas Bldg.
Hardwicke-Etter Co.
To be assigned.
Harley Sales Co.
30' x 40' Block 4
Harnischfeger Corp.
50' x 80' Block 203, North Area
Harris, Upham & Co.
Booth 7, Texas Bldg.
Harrisburg Sales & Service
Booth 96, Texas Bldg.
Herb J. Hawthorne, Inc.
Booth 27N, North Area
Haynes Co.
23' x 20' So. of Block 201, North Area
Hazard Wire Rope Division, American Chain & Cable Co.
Booths 29-30, Silver Lane
Hercules Filter Corp.
Booth 10, Texas Drive
Hercules Motors Corp.
30' x 80' Block 206, North Area
Hercules Tool Co.
Booths 7-9, Calif. Bldg.
Hewitt Robins
Booths 6-7, Silver Lane
Hilliard Corp.
Booth 153, Oklahoma Bldg.
Hillmac Division of A.C.C.
Booth 53, Kansas Bldg.
Hillman-Kelley
40' x 40' Block 203, North Area
Don Hinderliter, Inc.
Booths 87-88, Texas Bldg.
H & M Pipe Beveling Machine Co.
Booths 50-51, Calif. Bldg.
Hoerner Boxes, Inc.
Booth 18, Kansas Bldg.
Charles N. Hough Mfg. Co.
Booths 123-124, Texas Bldg.
Houston Oil Field Material Co.
Booths 18-21, Texas Bldg.
Hughes Tool Co.
80' x 80' Block 106
Humble Oil & Refining Co.
Booths 78-79, 132-133, Texas Bldg.
Hutchison Mfg. Co.
Booths 147-148, 183-184, Oklahoma Bldg.
Hydril Co.
18' x 30' Block F
Hydro-Test, Inc.
30' x 30' Block 202 North Area
Hypro Engineering Co.
Booths 12-13, Kansas Bldg.

I

Indikon Co.
Booth 4, Park Lane
Ingersoll-Rand Co.
28' x 45' Block U
Insley Mfg. Corp.
30' x 90' Block 9
I-T-E Circuit Breaker Co.
Booths 22-23, S & T Bldg.

International Gas Lift S. A.
Booth 53, Calif. Bldg.
International Harvester Co.
70' x 90' Block 101, 52' x 45' Block 104
International Nickel Co.
Booths 64-65, Texas Bldg.
Interstate Oil Compact Commission
Booth 3, Texas Drive
Instruments, Inc.
11' x 15' West of Block S
Iverson Supply Co.
Booths 88-90, Kansas Bldg.

J

Jensen Bros. Mfg. Co.
Booth 21, Kansas Bldg.
Jensen Engineering Co.
Booths 45N-46N, North Area
Jet-Lube, Inc.
Booth 134, Oklahoma Bldg.
Johns-Manville Sales Corp.
Booths 44-47, Oklahoma Bldg.
Johnson-Fagg Engineering Co.
Booth 29, Park Lane
Johnston Testers, Inc.
25' x 50' Block 104
S. M. Jones Co.
Booths 15-16, Oklahoma Bldg.
Jones & Laughlin Supply Co.
80' x 70' Block 1
Joy Mfg. Co.
25' x 75' Block 104, 50' x 50' Block 7
J. P. Machine & Tool Co.
Booth 42N, North Area
Justrite Mfg. Co.
Booth 17, S & T Bldg.

K

Ben F. Kelley Co.
Booths 36-37, Silver Lane
Ken Corp.
10' x 10' West of Booth 31, Silver Lane
Kerotest Mfg. Co.
Booths 89-90-121-122, Oklahoma Bldg.
Kerr-McGee Oil Industries, Inc.
Booths 63-64, Oklahoma Bldg.
"KEX" National Service Co.
Booth 10, S & T Bldg.
M. M. Kinley Co.
Booth 38, Silver Lane
Klemp Metal Grating Corp.
Booths 84N-85N, North Area
Kobe, Inc.
Booths 217-218, 233-234, Oklahoma Bldg.
Koehring Co.
50' x 74' Block 115, West Area
Koppers Co., Metal Products Div.
Booths 73-75, Texas Bldg.
Kohler Co.
Booths 39-40, Kansas Bldg.

L

Ladish Co.
Booths 7-9, Kansas Building
Landis Machine Co.
Booths 17-18, Calif. Bldg.
Larkin & Co.
Booth 58, Calif. Bldg.
LeBus International Engineers, Inc.
Booths 70-71, Texas Bldg.
Le Roi Division, Westinghouse Air Brake Co.
20' x 50' Block R
Lee Construction Crp.
Booths 26-27, Kansas Bldg.
R. G. LeTourneau, Inc.
Booths 93-94, Kansas Bldg.
Leavitt Machine Co.
Booth 26, Park Lane
Lincoln Electric Co.
Booths 201-202, 249-251, Oklahoma Bldg.
Line Scale Co.
Booth 205, Oklahoma Bldg.
Link-Belt Co.
Booths 61-63, Texas Bldg.
Lone Star Steel Co.
Booth 69, Texas Bldg.
Loveless Mfg. Co.
20' x 40' Block 107
Lufkin Foundry & Machine Co.
50' x 70' Block 3
Lufkin Rule Co.
Booths 121-122, Texas Bldg.
Lunkenheimer Co.
Booths 67-68, Oklahoma Bldg.
Lycoming Division, Avco
Booths 15-16, Park Lane
Lynes, Inc.
Booth 31N, North Area

M

McCord Corp.
Booths 72-73, Oklahoma Bldg.
McCullough Tool Co.
30' x 44' Block 104
McEvoy Co.
booths 91-92, Kansas Bldg.
McFarland Engineering & Pump Co.
Booth 5, Texas Drive
McKissick Products Corp.
Booths 245-246 Oklahoma Bldg.;
9' x 9' No. Side of So. Door, Okla. Bldg.
Mack Trucks, Inc.
30' x 80' Block 202, North Area
Macwhyte Co.
Booths 130-131, Oklahoma Bldg.
Magnaflux Corp.
Booths 10-11, Silver Lane
Magneto Ignition Co.
Booths 130-31, Kansas Bldg.
Maloney Crawford Tank & Mfg. Co.
Booths 116-117, Texas Bldg.
F. H. Maloney Co.
Booth 14, Texas Bldg.
Charles E. Manning Co.
Booth 9N, North Area
Manning, Maxwell & Moore
Booths 229-230, Oklahoma Bldg.
Manning, Maxwell & Moore, Shaw Box Division
15' x 24' East of Block 115, West Area
Manzel, Division Houdaille Industries
Booth 50, Oklahoma Bldg.
Marathon Electric Mfg. Corp., Large Apparatus Div.
Booths 206-207, Oklahoma Bldg.
Marine Products Co.
Booths 61N-63N, North Area
Marsh & Marine Mfg. Co.
25' x 38' Block 1E, East Area
Wm. H. Mason Co.
Booths 72N-73N, North Area
C. A. Mathey Machine Works
24' x 60' Block V
Mayhew Machine & Supply Co
50' x 100' Block 118, West Area
Merrill Lynch, Pierce, Fenner & Smith
Booth 44, Texas Bldg.
Metallizing Engineering Co.
Booths 86N-87N, North Area
Metalock Casting Repair Co.
Booth 13, Silver Lane
Mid-Continent Supply Co.
130' x 70' Block 3
Midwestern Engine & Equipment Co
45' x 81' Block 107
Mine Safety Appliance Co.
Booths 48-49, Oklahoma Bldg.
Minneapolis-Moline Co.
10' x 60' East of S & T Bldg.
Minnesota Mining & Mfg. Co.
Booths 41-43, Kansas Bldg.
Mission Mfg. Co.
Booths 91-93, 118-120, Texas Bldg.
Moran Furnace & Sheet Metal Co.
10' x 90' East of Kansas Bldg.
Lee C. Moore Corp.
Booths 65-66, Oklahoma Bldg.
Morrow Engineering Specialty Co.
Booth 8, Texas Bldg.
Morse Chain Co.
Booths 14-16, Silver Lane
Motorola Inc., Communications & Electronics Division
Booth 81, S & T Bldg.
Mountain Iron & Supply Co.
Booths 96-98, Oklahoma Bldg.
Mohawk Petroleum Co.
30' x 40' Block 206, North Area
Mud Control Laboratories, Inc.
Booths 123-124, Kansas Bldg.
Multi-Color Process Co.
Booth 20, Park Lane
Murphy Diesel Co.
50' x 20' West of Block Q
Frank W. Murphy Mfgrs.
Booths 14-15, California Bldg.

N

National Bank of Tulsa
30' x 30' Block H
National Diamond Laboratory
Booth 79, Oklahoma Bldg.
National Supply Co.
120' x 80' Block 1; 80' x 161' West Area,
adjacent to Block 1
National Tank Co.
28' x 90' Block S; 22: x 30' West of Block S
Nelson Electric Mfg. Co.
Booths 65-66, Kansas Bldg.
Nelson Stud Welding, Division of Gregory Industries
Booth 166, Oklahoma Bldg.
New Hermes Engraving Machine Corp.
Booth 89N, North Area
W. C. Norris, Mfgrs., Division of Dover Corp.
95' x 30' Block 5
Wm. W. Nugent & Co.
Booths 171-172, Oklahoma Bldg.
Nutro Products Corp.
Booth 17, Park Lane

O

Oakite Products, Inc.
Booths 22-23, Texas Bldg.
Walter O'Bannon Co.
Booths 85-86, Oklahoma Bldg.
Ohio Injector Co.
Booths 219-220, 231-232, Oklahoma Bldg.
Oil Center Tool Co.
Booth 104-105, Texas Bldg.
Oil Daily
Booth 176, Oklahoma Bldg.
Oildex Corp.
Booth 80N, North Area
Oilfield Equipment Corp. of Colorado
23' x 40' North of Block 10, North Area
Oil Metering Equipment Corp.
No. Half of Block 120, West Area
Oil States Rubber Co.
Booth 224, Oklahoma Bldg.
Oil Tool Mfg. Co.
Booth 154, Oklahoma Bldg.
Oklahoma Industrial Distributors Assn.
Booth 56, California Bldg.
Oklahoma Rig & Supply Co.
Booth 4, Oklahoma Bldg.

Oklahoma Steel Castings Co.
Booths 47-48, Texas Bldg.
D. W. Onan & Sons, Inc.
28' x 30' Block T
Orbit Valve Co.
Booths 33-35, Texas Bldg.
Otis Engineering Corp.
Booth 113, Texas Bldg.
O-T-M Corp.
Booths 29-30, S & T Bldg.
Owens-Corning Fiberglas Corp.
Booths 97-98, 119-122, Kansas Bldg.
Ozark Mahoning Co.
Booth 1, Texas Drive

P

Pacific Mercury TV Mfg. Corp.
Booth 21, S & T Bldg.
Henry H. Paris Distributor Inc.
Booths 20-22, Calif. Bldg.
Parkersburg Rig & Reel Co.
40' x 40' Block B
Partlow Corp.
Booth 35, Silver Lane
Payne Manufacturing Co.
Booths 132-133, Kansas Bldg.
Peerless Mfg. Co.
Booths 215-216 Oklahoma Bldg.
Peerless Pump Div., Food Machinery & Chemical Co.
Booths 11-12, Oklahoma Bldg.
Perfect Circle Corp., Cosmsco Division
Booths 26-27, Oklahoma Bldg.
Penberthy Mfg. Co.
Booths 13N-14N, North Area
Perfex Corp.
Booths 42-43, Silver Lane
Perforating Guns Atlas Corp.
Booth 1N, North Area
Perrault Equipment Co.
38' x 70' Block 102
Petroleum Engineer Publishing Co.
30'' x 20' Block A
Petroleum Publishing Co.
30' x 40' Block 5
Petroleum Times Ltd.
Booth 133, Oklahoma Bldg.
Petroleum Week
Booths 136-137, Oklahoma Bldg.
Petrolite Corp.
28' x 45' Block U
Philadelphia Gear Works, Inc.
Booths 85-86-20, S & T Bldg.
Phillips Petroleum Co.
Booths 106-107, Texas Bldg.
Pioneer Centrifuging Co.
Booths 19N-21N, North Area
Pipe Line Development Co.
Booths 57N-58N, North Area
Pipe Line News
Booth 28, Silver Lane
Piper Aircraft Corp.
56' x 100' Block 117
Pittsburgh Steel Co.
Booths 4-6, Texas Bldg.
H. K. Porter Co.
Booths 22-25, Oklahoma Bldg.
Potter Aeronautical Co.
Booths 81N-82N, North Area
Power Plus Corp.
Booths 31-33, Park Lane
Practical Engineering Co.
Booth 38, Kansas Bldg.
Precision Mfg. Co.
23' x 30' No. of Block 10, North Area
Precision Products, Inc.
Booths 42-43, Oklahoma Bldg.
Premetco (Glen Mason, Cunningham & Assoc.)
Booth 7, Texas Drive
H. C. Price Co.
Booths 203-204, 247-248, Oklahoma Bldg.
Producers Chemical Co.
Booths 27-28, Park Lane
Process Equipment Co.
Booth 77, Kansas Bldg.
Procon, Inc.
Booth 62, S & T Bldg.
Progressive Brass Mfg. Co.
Booth 11, Texas Bldg.
Public Service Co. of Oklahoma
16' x 14' SW Corner of Cafeteria
Purolator Products Co.
Booths 17-18, Oklahoma Bldg.
Pyle-National Co.
Booth 9, S & T Bldg.
Pyrene C-O-Two Division of Fyr-Fyter Co.
Booth 38, Oklahoma Bldg.

Q

Quincy Compressor Co.
Booth 38N, North Area

R

Thompson Ramo-Wooldridge Corp.
Booths 95-96, Kansas Bldg.
Ramsey Winch Mfg. Co.
10' x 30' North of Calif. Bldg.
Rector Well Equipment Co.
Booths 19-21, Oklahoma Bldg.
Reda Pump Co.
Booths 50-51, 54-55, Kansas Bldg.
Reed Roller Bit Co.
30' x 50' Block 4
The Refinery Engineering Co.
Booths 31-32-87, S & T Bldg.
Refinery Supply Co.
Booth 8, S & T Bldg.
Reich Bros. Mfg. Co.
10' x 30' So. of Block 118, West Area
Reliance Electric & Engineering Co.
30' x 40' Block 206, North Area
Remco Mfg. Co.
25' x 40' Block 205, North Area
Ren Equipment Co.
Booths 31-33, Park Lane
Republic Steel Corp.
Booths 102-115, Kansas Bldg.
Republic Supply Co.
Booths 99-101, 116-118, Kansas Bldg.
Reynolds Metals Co.
2040' x 60' Block 207, North Area
Reynolds Oil Field Sales Co.
Booth 260, Oklahoma Bldg.
Riddle & Hubbell Co.
20' x 20', SE Corner of Cafeteria
Ridge Tool Co.
Booths 28-31, Texas Bldg.
Roach Equipment Co.
Booth 59N-60N, North Area
Robbins & Myers, Inc.
Booths 52N-55N, North Area
Roberts Mfg. Co. of Cleburne, Texas
Booth 41N, North Area
Rochester Ropes, Inc.
Booths 94-95, Texas Bldg.
Rockford Clutch Division, Borg Warner Corp.
Booths 74-75, Oklahoma Bldg.
Rockwell Mfg. Co.
Booths 33-38 S & T Bldg.; 10' x 10' outside S & T Bldg.
Rockwell Standard Corp., Transmission & Axle Division
30' x 40' Block 204, No. Area
John A. Roeblings Sons Co.
Booths 69-70, S & T Bldg.
Rollway Bearing
Booths 84-83, Texas Bldg.
Rolo Manufacturing Co.
24' x 30' Block V
Ross-Martin Co.
Booth 13, S & T Bldg.
Rotary Drilling Services, Inc.
Booth 55, California Bldg.
Rotary Oil Tool Co.
Booth 30N, North Area
Roto Hammer Co.
75' x 27½' Block 104
Rust-Oleum
Booth 129, Kansas Bldg.

S

Salt Water Control, Inc.
20' x 40' Block 207, No. Area
Sapulpa Tank Co.
Booth 34, Park Lane
Schield Bantam Co.
60' x 40' Block 206, No. Area
Schlumberger Well Surveying Corp.
76' x 30' Block 105
Scott Industries
Booth 79, Kansas Bldg.
Scott-Rice Co.
Booth 7-8, Oklahoma Bldg.
Sealol Corp.
Booth 41, Silver Lane
Seismograph Service Corp.
Booths 75-76, S & T Bldg.
Sentinel Mfg. Co.
23' x 20' So. of Block 203, North Area
Shaffer Tool Works
Booths 1-2-76-135, Oklahoma Bldg.
Sherman Products, Inc.
20' x 40' Block 207, No. Area
Robert A. Shuey Co.
Booth 14, S & T Bldg.
Sinclair Oil & Gas Co.
Booths 36-37, Oklahoma Bldg.
Skinner Brothers
Booths 56-57, Kansas Bldg.
Skelly Oil Co.
Booths 3-6, Kansas Bldg.
SKF Industries, Inc.
Booths 67-68, Texas Bldg.
Smithco Engineering, Inc.
23' x 32' So. of Block 203, North Area
A. O. Smith Corp.
Booths 143-146, 185-188, Oklahoma Bldg.
H. C. Smith Oil Tool Co.
Booths 10-11, Calif. Bldg.
Solar Aircraft Co.
20' x 40' Block 205, No. Area
Sooner Pipe & Supply Corp.
Booth 90N, North Area
South Chester Tube Co.
Booth 77, Oklahoma Bldg.
Southwest Oilfield Products
Booth 59, Oklahoma Bldg.
Southwest Wheel, Inc.
37½' x 43½' Block 114, West Area
Southwestern Bell Telephone Co.
Booths 44-45, 60-61, Kansas Bldg.
Southwestern Porcelain Steel Corp.
North ½ of 22' x 30', West of Block "S"
Spang and Co.
Booths 44-45, 60-61, California Bldg.
Sparton Aircraft Co.
50' x 50' SE Corner of Block 120, West Area
Standard Magnesium Corp.
Booth 67, S & T Building
Standard Safety Equipment Co.
Booth 2N, North Area
Star Drill-Keystone Co.
30' x 40' in Block 204, North Area
L. S. Starrett Co.
Booths 226-228, Oklahoma Bldg.
Stewarts and Lloyds

Have You a Special Heat Transfer or Chiller Problem?

Vogt

Has the answer in its Scraped Surface Exchangers

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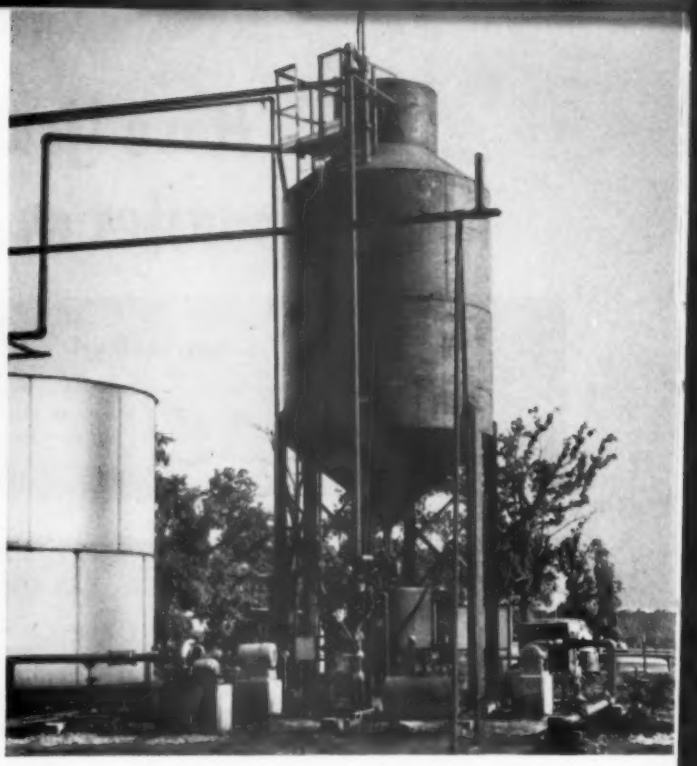
SALES OFFICES: New York, Chicago, Cleveland, Dallas, Philadelphia, St. Louis, Charleston, W. Va., Cincinnati,

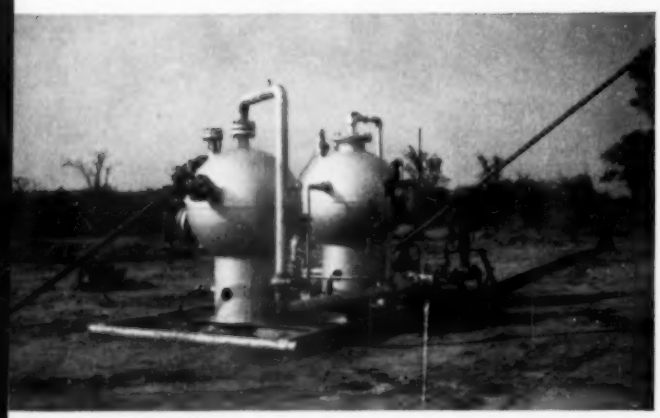
Integrated Production Systems for

LEASE AUTOMATIC CUSTODY TRANSFER

Since lease automatic custody transfer is the key to complete automation at the wellhead, and hence the key to cost reduction, the dependability of the LACT equipment is particularly important. Graver offers two thoroughly proved integrated production systems: Type I features intermittant flow, with capacities from 1150 to 5850 bbl./day. Type II provides continuous flow in capacities from 2000 to 5850 bbl./day. Ask for folder describing the dependable Graver systems.



3 Stars for Your Cost-Cutting Program



Above TWO-STAGE SPHERICAL SEPARATOR UNIT

A favorite when skid mounted as above for well-testing, this separator unit consists of spherical separators with capacities of 1200 lb. W.P. and 125 lb. W.P. and a gas meter run. Such units are rented for testing prior to installing permanent equipment.

Right GLYCODRATOR FOR GAS DEHYDRATION

The Graver Glycodrator removes moisture from the gas stream coming from the well. The tanks in the background are used for storing the distillate recovery from the gas stream. The Glycodrator is one of many types of oil and gas field equipment made by Graver.

GRAVER®

Oil and Gas Equipment Division

GRAVER TANK & MFG. CO., INC.

P.O. BOX 548, SAND SPRINGS (TULSA), OKLA.

Booths 78N-79N, North Area
Stewart & Stevenson Distrib. Co.
50' x 40' Block 122, West Area
Stewart & Stevenson Services, Inc.
20' x 40' East of Block "V"
Joe Stine
Booth 12N, North Area
St. Louis Cordage Mills
Booth 89, Texas Building
Stockham Valves & Fittings
Booths 15-16, S & T Bldg.
Stratoflex, Inc.
Booths 97-98, Texas Bldg.
Swepco Tube Corp.
Booth 212, Oklahoma Bldg.
Synchro-Start Products, Inc.
Booths 3-4, S & T Bldg.

T

Technical Oil Tool Corp. Ltd.
Booths 192-193, Oklahoma Bldg.
Templeton, Kenly & Co.
Booths 42-43, Texas Bldg.
Thermoid Co.
Booths 65-66, S & T Bldg.
Thew Shovel Co.
40' x 60' Block 204, North Area
Thompson Pump Co.
Booth 132, Oklahoma Bldg.
Thompson Tool Co.
20' x 40' Block 207, North Area
Thornhill-Carver Co.
Booths 67-72, Kansas Bldg.
Thornton-Mills Mfg. Co.
Booth 3N, North Area
Timken Roller Bearing Co.
Booths 139-142, Oklahoma Bldg.
Tnemec Co.
Booth 10N, North Area
Torrance Brass Foundry
Booth 28N, North Area
Torrington Co. Bantam Bearings Division
Booths 177-178, Oklahoma Bldg.
Tracerlab, Inc.
Booth 56, S & T Bldg.
Trans World Airlines
7' x 9' NW Front of Texas Bldg.
True-Gun-All Equipment Corp.
37½ x 75 Triangle Block 121, West Area
Tube Turns, Inc.
30' x 20' Block A
Tuboscope Co.
Booths 1-2, Texas Bldg.
Tubos DeAcero DeMexico S. A.
Booths 9-10, Park Lane
Tulsa Gasket Mfg. Co.
23' x 20' So. of Block 202, North Area
Tulsa Labor Council
20' x 23' So. of Block 202, North Area
Twin Disc Clutch Co.
20' x 40' Block 207, North Area

U

Union Carbide & Carbon Corp.
Booths 213-214, 237-238, Oklahoma Bldg.
Union Chain & Mfg. Co.
Booths 37-38, California Bldg.
Union Oil Co. of California
Booth 32, Kansas Bldg.
Union Steam Pump Sales Co.
Booth 68, S & T Bldg.
Union Tank Division, Butler Mfg.
30' x 30' Block "H"
Union Wire Rope Corp.
Booths 66, 80-82, 129-131 in Texas Building
Unit Rig & Equipment Co.
100' x 100' Block 12, 50' x 50' Block 14
U. S. Electrical Motors
Booths 67N-69N North Area
United States Motors Corp.
30' x 30' Block 202, North Area
United States Steel Co.
159' x 80' Block 2
U. S. Testing Co. Tulsa Testing Laboratory
Booth 25, Silver Lane
United Supply & Mfg. Co.
Booths 28-29 California Bldg.; 10' x 80' SE of California Bldg.
Universal Oil Products Co.
Booths 73-74, S & T Bldg.
Universal Packing & Gasket Co.
Booth 16, California Bldg
University of Tulsa Petroleum Science & Engr.
Booth 78, Oklahoma Bldg.

V

Vapor Recovery Systems Co.
Booths 69-71, Oklahoma Bldg.
Varel Mfg. Co.
Booth 49N, North Area
Velocity Power Tool Co.
Booth 115, Oklahoma Bldg.
Vickers, Inc.
27½' x 50' Block 104
Victaulic Co. of America
Booth 90, Texas Bldg.
Victor Equipment Co.
Booths 22-23, Silver Lane
Viking Pump Co.
Booth 57, Calif. Bldg.
Vinson Supply Co.
Booths 76-77, 134-135, Texas Bldg.
Visco Products Co.
Booth 73, Kansas Bldg.
Henry Vogt Machine Co.
Booths 221-223, Oklahoma Bldg.
J. H. H. Voss Co.
Booth 77, S & T Bldg.

W

E. H. Wachs Co.
20' x 40' Block 207, North Area
Wagner Electric Corp.
Booths 35-36, Calif. Bldg.
W. L. Walker Co.
16' x 8½' in front of S & T Bldg.
Walker Neer Mfg. Co.
60' x 50' Block 202, North Area
Wall Colmonoy Corp.
Booths 20-22, Kansas Bldg.
Walker Well Heads, Inc.
Booths 39-40, Silver Lane
Walworth Co.
Booths 103-108, Oklahoma Bldg.
Warner Lewis Co.
Booths 46, 59, California Bldg.
Water Engineering Service
Booth 85, Kansas Bldg.
Watts, Payne-Adv., Inc.
Space on top of S & T Bldg.
Waukesha Motor Co.
30' x 80' Block "J"
Weatherhead Co.
Booths 8-9, Silver Lane
Weatherford Oil Tool Co.
Booth 114-115, Texas Bldg.
Welex, Inc.
Booths 57-58, Texas Bldg.
Well Equipment Mfg. Co.
Booths 101-103, Texas Bldg.
Well Instrument Developing Co.
Booths 24-25, S & T Bldg.
S. K. Wellman Co.
Booth 23N, North Area
Westinghouse Electric Corp.
Booths 91-93, 118-120, Oklahoma Bldg.
Booths 1 & 2, Kansas Bldg.
Frank Wheatley Pump & Valve Mfg.
30' x 60' Block "T"; 19' x 29' East of Block "T"
C. H. Wheeler Mfg. Co.
Booth 70N, North Area
Wheeling Machine Products Co.
Booth 94, Oklahoma Bldg.
Whelond Co., Rotary Drilling Equipment Division
23' x 25' So. of Block 203, No. Area
White Motor Co.
120' x 40' Block 204, North Area
White Motor Co., Diesel Engine Division
50' x 40' Block L
Wichita Clutch Co.
Booth 26N, North Area
Williams Brothers Co.
Booth 195, Oklahoma Bldg.
J. H. Williams & Co.
Booth 37, Kansas Bldg.
R. C. Williams & Co.
Booths 125-126, Kansas Bldg.
T. D. Williamson, Inc.
30' x 50' Block 202, North Area
Willis Oil Tool Co.
Booths 18-19, Silver Lane
Willys Motors, Inc.
25' x 40' Block 205, North Area
Wilson Mfg. Co.
80' x 150' Block 201, No. Area
Wilson Supply Co.
Booths 116-117, Oklahoma Bldg.; 30' x 30' Block G
Thomas C. Wilson, Inc.
Booths 33-34, Silver Lane
Web Wilson Oil Tools, Inc.
Booths 87-88, 123-124, Oklahoma Bldg.
Geo. I. Wingo Machinery Co.
Booth 8N, North Area
Winslow Engineering Co.
Booths 57-58, Oklahoma Bldg.
Win-Well Mfg. Co.
Booth 71, S & T Bldg.
W-K-M Co.
70' x 50' Block 103, 9' x 10' West of Booth 1, Silver Lane
Gar Wood Industries, Inc.
60' x 100' Block 116, West Area
Woodward Governor Co.
Booth 82, S & T Bldg.
Worthington Corp.
Booths 43N-44N, North Area
Wyman-Gordon Co.
Booths 53-55, Oklahoma Bldg.
World Petroleum
Booth 19, Kansas Bldg.

Y

Yale Machine Works
Booth 95N, North Area
Yarnall-Waring Co.
Booths 14-16, Kansas Bldg.

Z

John Zinc Co.
36' x 38' Block 108

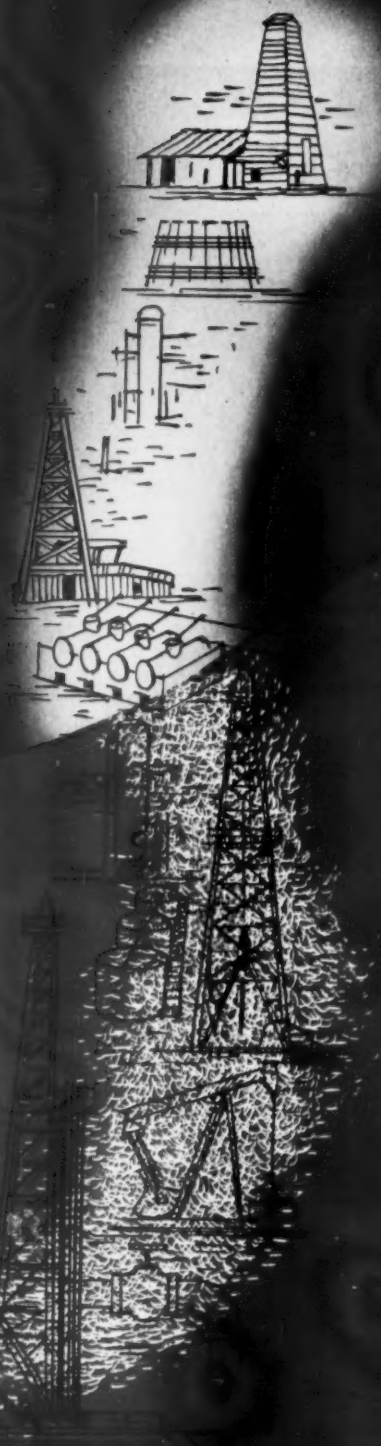
● In addition to these primary exhibitors, there will be hundreds of associate exhibitors—whose equipment or services will be part of the primary displays. A list of these, as of presstime, is available on request.

INTERNATIONAL PETROLEUM EXPOSITION

MAY 14 - 23 ...

1959

TULSA, U.S.A.



International Petroleum Exposition

Commemorating

THE CENTENNIAL OF THE PETROLEUM INDUSTRY

Fifth World Petroleum Congress

More than 5,000 oil men from at least 50 countries will be in New York this spring. They will be attending the World Petroleum Congress – the only international forum at which the industry's scientists can exchange information on oil's advancing technology.

For those who may be planning to attend, the following pages tell:

What the attractions are . . .

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Why the Congress Is Held

The World Petroleum Congress exists to further the study of oil technology on an international scale.

Backed by technical societies and top oil professional men throughout the world, the Congress's chief function is to arrange a meeting every four years at which oil professional men can (1) discuss scientific problems, and (2) narrow the gap between the research lab and operations. This work is done by a Permanent Council, whose chairman today is E. V. Murphree, president of Esso Research & Engineering Co.

The meeting this year in New York City is the Fifth World Petroleum Congress. Earlier congresses were in London (1933), Paris (1937), The Hague (1951), and Rome (1955). The meeting has grown in size and importance, so that the Congress now ranks as one of the most significant events on the petroleum industry's calendar, and one of the brightest highlights of the U.S. industry's Centennial this year.

The 1955 Rome registration of 3,250 was almost twice the figure for the 1951 Congress in The Hague. And the coming meeting in New York should come close to 6,000, with more than 1,000 oil men from countries outside the U.S. This will include a sizable Russian delegation.

A temporary organization, the Fifth World Petroleum Congress, Inc., has been formed to plan the May 30-June 5 meeting. The directors—all oil men—are: E. V. Murphree (chairman), Reid Brazell, F. S. Clulow, I. H. Cram, G. A. Davidson, C. E. Davis, H. W. Field, W. C. Kinsolving, Dr. W. E. Kuhn, J. W. Mecom, Dr. Jerry McAfee, E. B. McConnell, H. B. Nichols, C. E. Reistle, Jr., J. K. Roberts, and Dr. J. C. Zimmer.

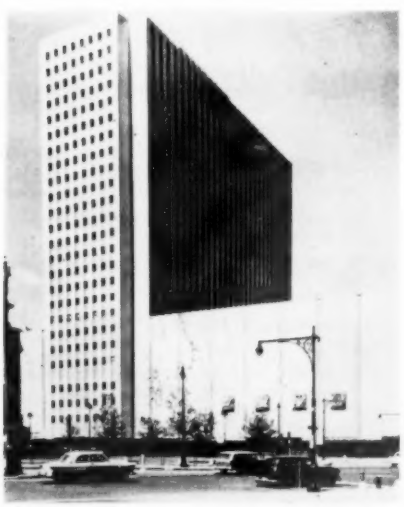
E. V. MURPHREE
President, Fifth World Petroleum Congress

Fast Education in Modern Oil..

Officials of the Congress see their meeting as having considerable management-development value in addition to the direct value from exchange of technical information.

The industry men who attend the Congress, get such "broadening" benefits as these, within a one-week period:

- Information on technical developments in all segments of the oil industry.
- Data on what's happening in the technology of many different countries.
- A chance to see first-hand modern oil facilities in different parts of the U.S. (through planned tours).
- A preview of what lies ahead in new petroleum products and in technological advance along all lines.

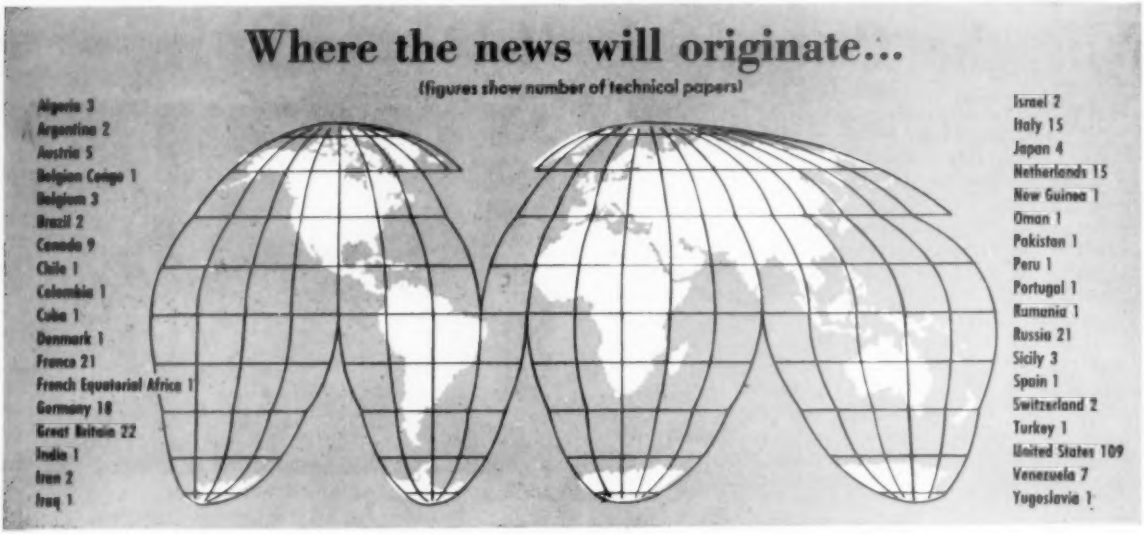


The Coliseum and its Services

The New York Coliseum is at Columbus Circle (59th St. and 8th Ave.). Specially built for the 5th World Petroleum Congress will be 11 large rooms, with seating capacity ranging from 300 to 550. These rooms, all on the third floor, will be for the technical meetings, with only the Congress registrants allowed to attend. On the first two floors will be an oil exposition. Admission will be only on invitation by exhibitors, and 20,000 visitors are expected.

Special facilities at the Coliseum for the Congress:

- Headquarters for all Congress activities.
- Travel and tourist offices, where tours may be booked.
- Message and information service, including a directory of all registrants.
- Currency exchange and banking facilities—to convert and obtain currency and to cash travelers' checks.
- Hotel reservation bureau.
- Library of technical reference material, plus a service for answering technical questions.
- Restaurants, bars, parking, first aid, and press headquarters.



What the Oil Scientists Will Say

On the next five pages are the 285 papers to be presented at the Coliseum in 100 technical sessions over the five days June 1-5, 1959. Only minor changes in this list are expected. In most cases, three papers will be presented at each of the sessions, which will last 2½ hours, morning and afternoon. Actual presentation of individual papers will take 20 minutes, in English or French. In most cases there will be a brief prepared comment by another authority, plus floor discussion. Interpretation into the alternate language will be provided if requested.

The 285 papers are listed below by: paper number, title, organization or author, and country. Papers marked (*) will be printed only in French. Missing numbers indicate papers are withdrawn.

Section I
Geology & Geophysics

1. The Gulf of Batabano, a Modern Carbonate Basin.
Jersey Production Research Co. U. S. A.

2. Deposition and Diagenesis of Some Upper Paleozoic Carbonate Sediments in Western Canada.
L. V. Illing. Canada

***3. French Contribution to the Study of Dolomitization.**
Institut Francais du Petrole; Societe Esso de Recherche et d'Exploitation Petroliers. France

4. The Structural Development of Northwest German Salt Domes and their Importance for Oil Accumulation.
Amtes fur Bodenforschung. Germany

5. A Geological Appraisal of Present and Future Exploration Techniques on Salt Domes of the Gulf Region of the United States.
Michel T. Halbouty Oil & Gas Interests. U. S. A.

***6. Saliferous Tectonic of the Cuanza Basin (Angola).**
Companhia de Petroleos de Angola. Portugal

7. Role of Evaporites in Petroleum Geology.
Northwestern University. U. S. A.

***8. The Migration of Oil in an Oilfield in Relation to its Original Formation.**
Societe des Petroles d'Afrique Equatoriale Francaise; Institut Francais du Petrole. France

9. Migration of Oil in the Gifhorn Trough, Northwest Germany.
Deutsche Erdol AG. Germany

10. Geochemical Analysis of Oils and Asphalts.
Institut Recerche Donigami. Italy

11. Gela in Sicily—An Unusual Example of an Oilfield.
Agip Mineraria. Italy

12. The Ragusa Oil Field, Sicily.
Gulf Italia Co. U. S. A.

13. Evidence on Slump Phenomena (Olistrostomes) in Areas of Hydrocarbon Exploration in Sicily.
Gulf Italia Co. Italy

14. The Geology of Oman and Hadhramaut.
Iraq Petroleum Co., Ltd. Gt. Britain

15. Oil Possibilities in the Sedimentary Basins of Turkey.

Mineral Research & Exploration Institute of Turkey. Turkey

16. Petroleum Possibilities of Israel.
Prof. L. Y. Picard. Israel

17. The Main Sedimentary Basins of Iran and their Oil Prospects.
Iran Oil Co. Iran

18. The Geology of the Gach Saran Oilfield, Southern Iran.
Iranian Oil Exploration & Producing Co. Iran

19. Stratigraphy of Lower Indus Basin.
Pak-Stanvac Petroleum Project. Pakistan

20. Petroleum Exploration of California Offshore.
California State Lands Commission. U. S. A.

21. Geology and Petroleum Development of the Continental Shelf of the Gulf of Mexico.
Gordon Atwater. U. S. A.

22. The Petroleum Potential of the Emerged and Submerged Atlantic Coastal Plain of the United States.
U. S. Geological Survey. U. S. A.

23. Petroleum Exploration in the Future.
A. I. Levorsen. U. S. A.

25. Eu-Geosynclines as Potential Oil Habitats.
N. V. De Bataafsche Petroleum Maatschappij. The Netherlands

26. The Geology and Development of the Bolivar Coastal Field, Maracaibo, Venezuela.
Creole Petroleum Corp. Venezuela

27. Petroleum Geology of the Four Corners Area.
Shell Oil Co. U. S. A.

28. Specific Features of the Geological Structure of Flat Bed Regions in the Soviet Union in Relation to their Oil and Gas Saturation.
Prof. M. F. Mirchink et al. U. S. S. R.

***29. Geophysical Exploration of the Central Congo Basin and its Interpretation.**
P. Evrad. Belgium

***30. French Equatorial Africa Oilfields.**
Societe des Petroles d'Afrique Equatoriale Francaise. France

31. Sedimentation of the Multibillion Barrel McMurray Oil Sands of Alberta, Canada.
Research Council of Alberta. Canada

32. Geology of the Maquia Oilfield in Eastern Peru.
Sociedad Geologica del Peru. Peru

33. Progress in Geophysical Methods for Prospecting for Oil and Gas in the U.S.S.R.
Prof. Y. N. Godin et al. U. S. S. R.

34. The Use of Amplitude and Frequency in Exploration Seismology.
The British Petroleum Co., Ltd. Gt. Britain

35. Review of the Progress of Well Logging Since the Fourth World Petroleum Congress.
Schlumberger Well Surveying Corp. U. S. A.

36. Investigations into Direct Oil Detection Methods.
Prof. V. A. Sokolov et al. U. S. S. R.

37. Absolute Age Determination of Sedimentary Rocks.
Lamont Geological Observatory. U. S. A.

***38. Paleogeographical Outline of the Northern Saharian Basins.**
Compagnie Francaise des Petroles d'Algerie; Societe Nationale de Recherche et d'Exploitation des Petroles en Algerie. France

***39. The Development of Seismic Refraction in the Northern Sahara in Conjunction with the Progress Realized in its Geological Interpretation—Its Role in the Discovery and Study of the Hassi Messaoud Field.**
Compagnie Generale de Geophysique, Societe Nationale de Recherche et d'Exploitation des Petroles en Algerie; Compagnie Francaise des Petroles d'Algerie. France

***40. Problems in Petroleum Exploration in the Paleozoic Northern Border Zone of the Hoggar.**
Compagnie de Recerches et d'Exploitation de Petrole au Sahara. France

41. Magnetics and Basement Tectonic Patterns.
Gulf Oil Co. U. S. A.

42. Regional Aeromagnetic Interpretation in Alberta.
Geological Survey of Canada. Canada

43. Gravity Measurements in the Central Valley of Chile.
University of Chile. Chile

44. The Structure of the Folded Molasse, of its Foreland and of the Adjoining Parts of the Alps in Western Bavaria by Means of Geophysical Measurements. Preussag. Germany

45. Seismic Refraction Exploration of Faulted Limestone Structures in the Eastern foothills of the Canadian Rocky Mountains.
Triad Oil Co., Ltd. Canada

46. Seismic Mapping of Fault Zones in Middle and Northern Part of the Upper Rhine Graben.
Winterschall AG. Germany

47. Oil Exploration in the Molasse Zone of Western Austria.
R. H. Janoschek. Austria

48. The Oilfields of the Vienna Basin.
K. Friedel. Austria

49. Oil Basins of Argentina.
Yacimientos Petroliferos Fiscales. Argentina

50. Oil Basins of Brazil.
Petrobras. Brazil

51. Geology of the Brazilian Amazon Basin.
Petrobras. Brazil

52. Geology of Vogelkop, Netherlands New Guinea.
Nederlandse Nieuw-Guinea Petroleum Maatschappij. The Netherlands

***53. Petroleum Research in Southern Italy and its Geologic Bases.**
E. Beneo. Italy

54. Jurassic and Cretaceous Microfacies from Pre-Alps and Central Apennines.
University of Milan. Italy

55. Survey of Exploration and Production of Oil in Yugoslavia.
Assn. of Yugoslav Oil & Gas Industry. Yugoslavia

56. Possible Oil Bearing Regions in India.
Oil & Natural Gas Commission. India

****57. Definitions and Characterization Methods for Oil-Bearing Mother Rocks.**
A Special Congress Committee. International

****58. Recent Progress in Sedimentology.**
International Assn. of Sedimentology. International

59. The Appalachian Region.
Appalachian Geological Society. U.S.A.

***To be presented in the separate one-day symposia on these subjects.*

Section II
Drilling & Production

1. Economics of Offshore Petroleum Development in the U. S. A.
Shell Oil Co. U. S. A.

2. Conservation of Oil and Gas in the State of Texas.
Texas Railroad Commission. U. S. A.

3. Progress in the Theory and Practice of Oil and Gas-Feld Developments in the U. S. S. R.
Prof. A. P. Krylov et al. U. S. S. R.

4. Oil Shale—Energy for the Future.
Union Oil Co. of California. U. S. A.

5. Special Features of Contract Drilling Outside North America.
N. V. De Bataafsche Petroleum Maatschappij. The Netherlands

***6. A Theoretical and Experimental Study of Drill String Stability in Turbodrilling. Its Relationship to Borehole Deviation.**
Societe Nationale de Petrole d'Aquitaine & Societe NEYRPIC. France

7. Progress in Turbodrilling and Study of New Drilling Methods in the U. S. S. R.
Prof. R. A. Ioannesyan et al. U. S. S. R.

8. Air and Gas Drilling.
Magnolia Petroleum Co. U. S. A.

9. Shale Controlling Drilling Fluids.
The Texas Co. U. S. A.

***10. Drilling Problems Caused by High Formation Pressure Conditions in Some Areas of the Po-Valley; A Discussion of the Use of Bottom-hole Movers.**
Agrip Mineraria. Italy

11. Drilling and Production Operation in Lake Maracaibo.
Creole Petroleum Corp.; Compania Shell de Venezuela; Mobil Oil Co. de Venezuela; Mene Grande Oil Co. Venezuela

12. Spacing of Wells.
Yacimientos Petroliferos Fiscales. Argentina

13. Automatic Production Control.
Imperial Oil Ltd. Canada

14. Pays, Fluids and Reservoir Systems of the Main Structures of the Vienna Basin.
H. Wieseneder et al. Austria

15. The Pembina Oilfield, Alberta, Canada. An Example of a Low Permeability Reservoir.
Mobil Oil of Canada, Ltd. Canada

***16. Compressibility of Brines at Reservoir Conditions. Applications to Reservoir Engineering Problems.**
Agrip Mineraria. Italy

17. Development of Information for Evaluating In-Place and Recoverable Oil in a Subsurface Formation.
Humble Oil & Refining Co. U. S. A.

***18. The Continuous Poteclinometer-Dipmeter.** Societe de Prospection Electrique. France

On Crutches? In Wheel Chair?

A new guidebook is available to help physically handicapped persons in New York.

It tells which establishments have steps, and how many, which have ramps for wheel chairs, which theaters make it most convenient for persons in wheel chairs, etc. The booklet covers restaurants, theaters, museums, parks, sports arenas, churches, stores, and other places. Author is Sandra Schnur, who is herself handicapped.

Copies are available from Miss Schnur for $1, plus postage. The address: 2255 Cruger Ave., The Bronx, N. Y.

***19. Rock Type Distribution and Factors Affecting Ultimate Recovery in an Heterogeneous Carbonate Reservoir.**
Societe Esso de Recherche et d'Exploitation Petrolieres. France.

20. Fluid Injection for Increased Oil Recovery.
Pan American Petroleum Corp. U. S. A.

21. Laboratory and Field Experiments on Fire Flood Recovery Method.
Teikoku Oil Co., Ltd.; Tokyo University, Japan

22. Mechanism of Oil Production by Underground Combustion.
Koninklijke/Shell Exploration and Production Research Laboratories; N.V. De Bataafsche Petroleum Maatschappij. The Netherlands

23. Theoretical Principles of Hydraulic Fracturing of Oil Strata.
Prof. S. A. Christianovich et al. U. S. S. R.

24. Recovery Problems in a Fracture-Pore System, Kirkuk Field.
Iraq Petroleum Co., Ltd. Gt. Britain

25. Effect of Capillary and Gravitational Forces in the Water-Drive Process.
Koninklijke/Shell Exploration and Production Research Laboratories; N.V. De Bataafsche Petroleum Maatschappij. The Netherlands

***26. Results Obtained in the Rumanian Fields from the Resaturation of the Oil Reservoirs.**
Institute of Petroleum Research, Campina. Rumania

27. Results of Gas Injection in the LL-370 Area—Lake Maracaibo.
Creole Petroleum Corp. Venezuela

28. Relationship of Vapor-Liquid Equilibrium Ratios at Dewpoint Pressure to Compressibility Factors and Composition of Gas-Condensate Fluids.
S. S. Bureau of Mines. U. S. A.

29. Agua Grande—One of the Good Fields of America.
Geonisio Carvalho Barroso & Ivan Carvalho. Brazil

30. Recent Improvement & Development Work Concerning Oil Shale Processing at Kvarntorp, Sweden.
Edmund Schjanberg. Sweden

31. Graphical Solution of Fluid Coning Problems in Oil Production.
Petroleos Mexicanos. Mexico

32. Future Performance of the Cretaceous Limestone of Lower Tamaulipas as Controlled by Inert Gas Injection to Avoid the Static Pressure Declination.
Petroleos Mexicanos. Mexico

Section III
Oil Processes & Refining

1. The Refiner Looks at Cars of the Future.
Atlantic Refining Co. U. S. A.

2. Processing Needs for Higher Quality Fuels.
Universal Oil Products Co. U. S. A.

3. A New Isomerization Process.
Esso Research & Engineering Co. U. S. A.

4. Reactions in Catalytic Reforming of Naphthas.
Standard Oil Co. (Indiana); Esso Research & Engineering Co. U. S. A.

5. Hydrogenation of Petroleum Fractions.
Union Oil of California. U. S. A.

***6. The IFP Hydrorefining Process for Crude Oils and Petroleum Fractions.**
Institut Francais du Petrol. France

7. Cobalt Molybdenum Catalysts for Hydrodesulfurization and Reforming of Petroleum Fractions.
Stazione Sperimentale Per I Combustibili; S.p.A. per l'Industria Petrolifera a Chimica; Societa Petrolifera Italiana. Italy

8. Studies on a Commercial Two Stage Catalytic Cracking Plant.
Shell Oil Co. U. S. A.

9. Catalysts Based on Montmorillonite Mineral.
Sudchemie AG. Germany

10. Study of the Nature of Activity of Alumosilicate Catalysts.
Prof. K. V. Topchieva et al. U. S. S. R.

11. Chemical Changes in Lubricating Oil on Hydrofining.
Imperial Oil Ltd. Canada

***12. Hydrofining in the Manufacture of Bright Stock.**
Esso Standard S. A. Francaise. France

***13. Catalytic De-Aromatization of Light Distillates and the Hydro-Finishing of Lubricating Oils.**
Societe Francaise des Petroles BP. France

14. Production of Lubricating Oils and Paraffin from Sulfurous Oils in the U. S. S. R.
Prof. L. G. Zherdeva et al. U. S. S. R.

15. Dehydrogenation of Naphthenic Lubricating Oil Fractions.
Lobitos Oilfields, Ltd. Gt. Britain

***16. Sweetening of Petroleum Products by Catalytic Oxidation with Sulfur Dyes.**
Compagnie Francaise de Raffinage. France

17. Treating Aromatic By-Product Gasoline from Thermal Conversions by the BASF-Scholven Process for Light Oil Refining.
Badische Anlin & Soda-Fabrick AG. Germany

18. Development in Treating Processes for the Petroleum Industry.
Koninklijke/Shell Laboratorium. The Netherlands

19. Refinery Studies by Digital Computer.
Tidewater Oil Co. U. S. A.

***20. Economic Studies of Refining Problems by Means of Modern Electronic Computers.**
Societe des Petroles Shell Berre. France

21. Conjunct Polymerization of Ethylene with Heteropolyacid Catalysts.
Delft Technical University. The Netherlands

22. Extraction of Aromatics with Sulfolane.
Shell Development Co. U. S. A.

23. Gasoline Refining Using Adsorbents Selective for n-Paraffins.
Standard Oil Co. (Ohio). U. S. A.

24. Elementary Processes of Mass Transfer in Extraction, Absorption and Distillation.
Institute of Chemical Technology, Braunschweig. Germany

25. The Use of Gaseous Sulfur Trioxide in the Sulfonation of Petroleum Oils.
Manchester Oil Refinery, Ltd. Gt. Britain

26. Refining of Steam Cracked Gasoline.
The British Petroleum Co., Ltd. Gt. Britain

27. Twenty-Five Years with Fischer-Tropsch Fixed Bed Catalyst, Its Present Standing and Possibilities for the Future.
Ruhrchemie AG. Germany

28. The Fluid Coking Process—Commercial Experience to Date.
Esso Research & Engineering Co.; Tidewater Oil Co. U. S. A.

29. Processes for Continuous Thermocontact Treatment of Oil Stocks on Coke.
Prof. B. K. Amerik et al. U. S. S. R.

30. Catalytic Processing of Residual Fuel Stocks.
Houdry Process Corp. U. S. A.

31. The Importance of Hydrodesulfurization Upon Processing Economy in a European Refinery.
Societa Condor, Rho. Italy

Section IV
Chemicals from Petroleum & Natural Gas

1. Manufacture and Utilization of Aromatics from Petroleum.
Humble Oil & Refining Co. U. S. A.

2. Two-Stage Process for Production of Naphthalene and High Octane Gasoline from Cycle Stock.
Sinclair Research Laboratories. U. S. A.

3. Catalytic Dehydrocyclization of Paraffinic Hydrocarbons.
Prof. B. A. Kazansky; Prof. A. L. Liberman. U. S. S. R.

4. Kinetics of Pyrolysis of Ethane at Practical Conversions.
Union Carbide Chemicals Co. U. S. A.

5. Fundamental Relations of the Pyrolysis of Hydrocarbons to Acetylene and Ethylene.
Farbwerke Hoechst AG. Germany

6. Acetylene Production from Pyrolysis of Liquid Hydrocarbon Feedstocks.
Societe Belge de l'Azote et des Produits Chimiques du Marly; M. W. Kellogg Co. Belgium

7. Oxidative Cracking of Propane and Butane-Isobutane Mixtures.
University of Pisa. Italy

8. Cracking of Gaseous Hydrocarbons by Partial Oxidation.
Badische Anilin & Sodafabrick AG. Germany

9. Catalytic Synthesis of Cyclopentadiene Hydrocarbons.
Prof. N. I. Shuikin; Prof. T. I. Naryshkina. U. S. S. R.

10. Butadiene Production—Commercial Practice with Dow Catalyst.
Dow Chemical Co. U. S. A.

***11. A Process for Manufacturing Isoprene.**
Institut Francais du Petrole. France

***12. Manufacture of Conjugated Diolefins by Hydroperoxidation of Olefins.**
Institut Francais du Petrole. France

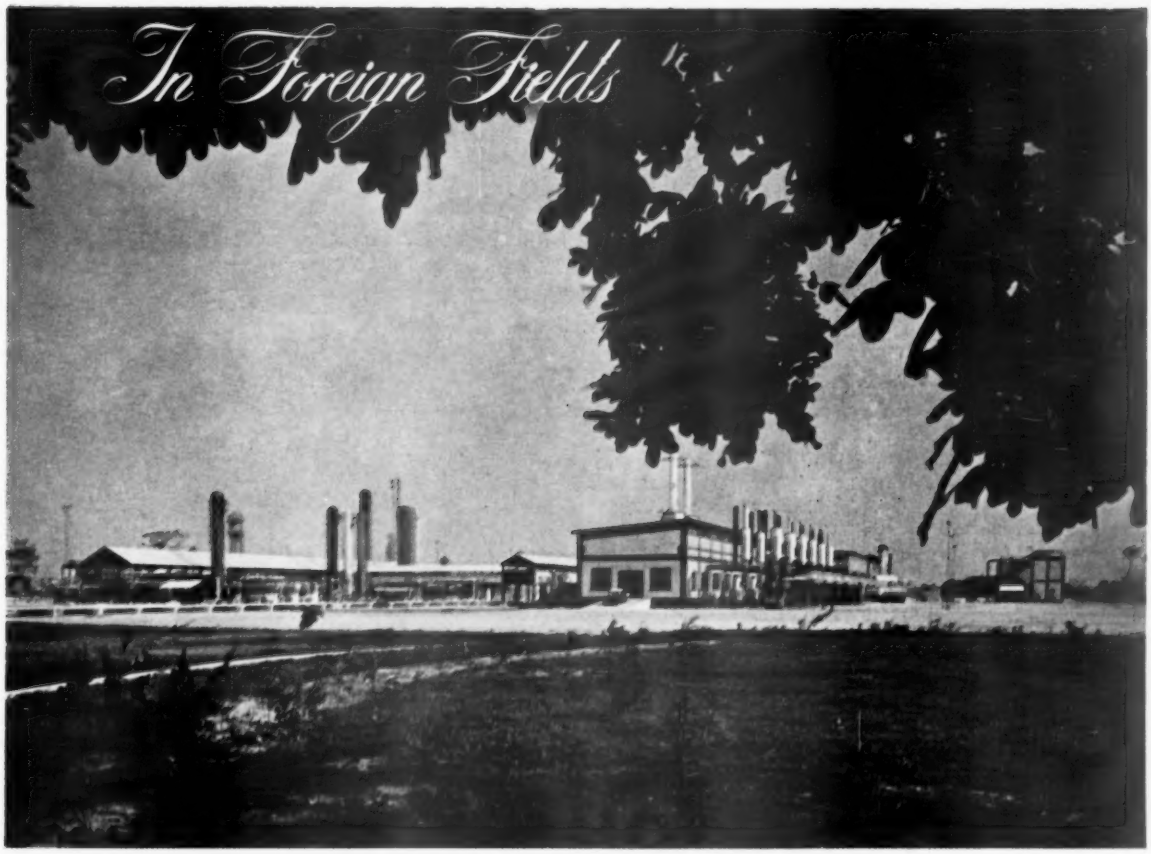
13. The Production of Synthesis Gas by Partial Oxidation.
The Texas Co. U. S. A.

14. Recent Developments in the Oxo Process.
Gulf Research & Development Co. U. S. A.

15. Synthesis of Higher Aliphatic Alcohols by Direct Oxidation of Paraffinic Hydrocarbons.
Prof. A. N. Bashkirov; Prof. V. V. Kamzolkin. U. S. S. R.

For More Information . . .

. . . on any phase of the Congress and related activities, write:
Fifth World Petroleum Congress, Inc.
527 Madison Avenue
New York 22, N. Y.
Or telephone the New York City number:
MUrray Hill 8-7145



PETROLEOS MEXICANOS

Gas Processing Plant

CIUDAD PEMEX, MEXICO

HUDSON services in foreign fields are flexible to the owners' requirements, including design and building of the entire project, or process design, mechanical design, purchasing or construction. Illustrative is the above pictured major gas processing project in Mexico, designed to extract 30,000 barrels of liquid products from 500 million cubic feet per day of gas. Process design, mechanical design, and procurement of equipment was entrusted to HUDSON. The plant was constructed by Petroleos Mexicanos near the Yucatan Peninsula in Mexico.

In Mexico, Canada, South America, Europe, and the Near East; in deserts, mountains, and jungles; in locales in some cases without established rail, road, or water transportation; working at times with inexperienced labor forces of mixed nationalities; under climatic extremes, HUDSON has completed major oil, gas, chemical, and heavy mineral processing projects – on time – and to the complete satisfaction of the owners.

This varied experience from Tierra del Fuego to Canada, from Pakistan to Peru, qualifies HUDSON to complete with speed and facility major processing projects under the most difficult conditions in any part of the world.

DESIGNERS AND CONSTRUCTORS OF PROCESS PLANTS FOR THE OIL, GAS, CHEMICAL, AND MINING INDUSTRIES

HUDSON

ENGINEERING CORPORATION

FAIRVIEW STATION • HOUSTON, TEXAS

SALES OFFICES: 9935 Santa Monica Blvd. Beverly Hills, California | 122 East 42nd St. New York 17, N. Y. | 199 Bay Street Toronto, Ontario, Canada | 17 Stratton St., Picadilly London W. 1, England | Corrientes 1115 Buenos Aires, Argen. | Rua Mexico 45 Rio de Janeiro, Brazil

HIGHLIGHTS OF
in the electric

PETRECO®

A long list of "firsts" has been added to Petreco achievements since the first electric demulsifying plant was installed for the Lucille Oil Company at Coalinga, California in 1909.

By continuing to carry on a program of progressive development, Petreco has been able to keep pace with the growing needs of the petroleum industry. The electric demulsifier came at a time when the problem of emulsion threatened to cause the waste of millions of barrels of "cut" oil. Then, when salt was recognized as a prime enemy of the refinery, the first electric desalter was developed by Petreco. Petreco was on hand, too, to answer the call for a method of removing sediment from certain crudes when they were found to be shortening the life of sub-surface pumping equipment.

Petreco has also helped in many important ways toward making refinery processing a more exacting science. Petreco electric distillate treating has brought automatic, precision-controlled accuracy to such operations as contacting, scrubbing and washing.

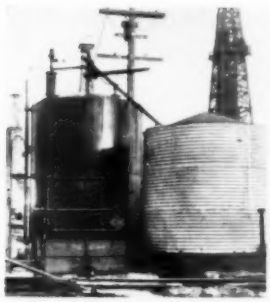
A single-purposed dedication to pioneership in its field has enabled Petreco to grow by helping the various branches of its industry to better methods, better products and greater operating efficiency . . . with substantial profits as a result. Petreco shall continue to devote its total energies and experience to this program.

In 1906, Dr. Frederick G. Cottrell of the University of California, perfected a method of precipitating solids from flue gases by subjecting the latter to the forces of a 100,000 volt electric field. In exploring possible uses for the process his attention was called to the tremendous waste in the petroleum industry caused by "useless" oil held in emulsion.

After a series of extensive tests into the use of the electric field for breaking emulsions, the first commercial installation was set up at the Lucille Oil Co., at Coalinga, California. The plant successfully reduced an emulsion of 14% water to less than 2% at the rate of 1000 barrels a day. The first electric dehydrator had been installed, and Petreco had taken the initial step in leadership based on a long series of "Firsts":

50 YEARS' LEADERSHIP

processing of petroleum products

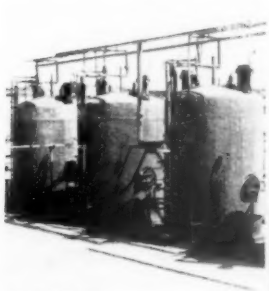


FIRST* *Closed Dehydrator*

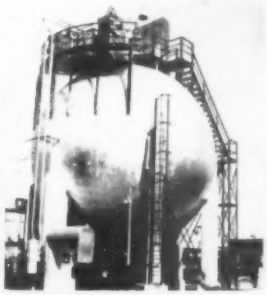
FIRST *Horizontal Electric Treating Unit*

FIRST *Pressurized Dehydrator*

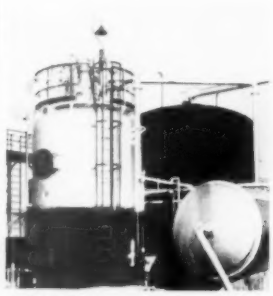
FIRST *Flow Line Dehydrator*



FIRST *Electric Desalter*

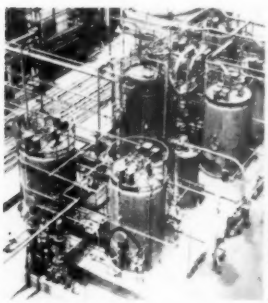


FIRST *Spherical Desalter*

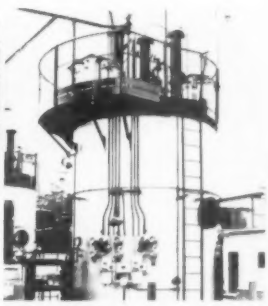


FIRST *Electric Distillate Treater*

*Photos used are typical of types of units mentioned. They are not, in every instance, photos of original installations.



FIRST *Electric Desaponifier*



FIRST *Electric Lube Oil Treater*

FIRST *Electric Sediment Separator*

FIRST *Two-stage Electric Distillate Treater*

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A DIVISION OF PETROLITE CORPORATION

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The service is up to you. Products? Sun's lubricants have been job-engineered and approved by leading equipment manufacturers. Sun's *complete* line, sold under your own name, will give you extra prestige . . . can help you win *more* than your share of profits from the building and road-construction industries.

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SUN OIL COMPANY

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IN CANADA: SUN OIL COMPANY LIMITED, Toronto and Montreal

16. Hydrogen Peroxide—New Techniques for Its Utilization.
Shell Development Co. U. S. A.

17. A New Process for Oxidation of Aromatics.
Standard Oil Co. (Ind.). U. S. A.

18. Production of Aromatic Dicarboxylic Acids.
Koninklijke/Shell Laboratorium; N.V. De Bataafsche Petroleum Maatschappij. The Netherlands

19. Acetic Aldehyde as Raw Material for Acrylonitrile. The Knapsack Process.
Knapsack Griesheim AG. Germany

20. Detergent Alkylsulfonates Derived from Petroleum Hydrocarbons through Hydroperoxides.
Kadimah Chemical Corp. Israel

21. Relationship between Structure of Phenyldodecane Isomers and Performance as Detergent Base Materials.
Koninklijke/Shell Laboratorium; N.V. De Bataafsche Petroleum Maatschappij. The Netherlands

23. New Plastics from Petroleum.
Montecatini Co. Italy

24. New Classes of Plastic, Rubbers, and Textile Fibers from Petroleum.
Instituto di Chimica Industriale Politecnico di Milano. Italy

25. Some Relationships of Polymerization of Alpha-Olefins on Complex Metal-Organic and Oxide Catalysts.
Prof. A. V. Topchiev; Prof. B. A. Krentsel. U. S. S. R.

26. Polymerization of Acetylene and Homologs.
Phillips Petroleum Co. U. S. A.

27. Oil Extension of Synthetic Rubbers.
Polymer Corp. Canada

28. Summary of the Synthetic Fiber Industry.
Chemstrand Corp. U. S. A.

29. Improved Process for Sulfur Recovery from Refinery Gases.
Atlantic Refining Co. U. S. A.

30. Thianaphthene and Homologs from Hydrocarbons and Hydrogen Sulfide.
The Texas Co. U. S. A.

31. Integration of Petroleum Chemicals Operations.
Imperial Chemical Industries, Ltd. Gt. Britain

Section V
Composition, Analysis, & Testing

1. Some Advances in Extreme Ultraviolet Spectrophotometry.
Esso Research & Engineering Co. U. S. A.

2. Analytical Application of Near Infrared Spectroscopy.
Shell Development Co. U. S. A.

3. The Present Status of the Infrared Study of Chemisorbed Molecules.
The Texas Co. U. S. A.

4. Gas Chromatography Guides, Development of Paraffin Isomerization Processes.
Standard Oil Co. (Ind.). U. S. A.

5. Continuous Separation of Multicomponent Mixtures by Gas Chromatography.
University of Basle. Switzerland

***6. The Application of Gas Chromatography in the Analysis of Crude Oils.**
Laboratoires de Recherches Purfina S.A. Belgium

***7. French Contribution to the Application of Spectrographic and Chromatographic Methods to the Petroleum Industry.**
Societe Esso Standard; Compagnie Francaise de Raffinage. France

8. Refining Application of Nuclear Magnetic Resonance Spectrometry.
Humble Oil & Refining Co. U. S. A.

9. Analytical Applications for Ion Exchange Resins in the Petroleum Industry.
"Shell" Research, Ltd. Gt. Britain

10. Petroporphyrins.
Johns Hopkins University. U. S. A.

***11. Identification and Properties of Porphyrin Bodies in Residues and Bitumens.**
Societa Aquila-Trieste; Instituto di Chimica Applicata; University of Trieste. Italy

***12. Constitution of Cyclic Sulfur Compounds in Petroleum—Separation and Identification.**
Compagnie Francaise de Raffinage. France

***13. Trace Elements Analysis in Petroleum Products.**
Institut Francais du Petrole. France

14. Minor Constituents of a California Petroleum.
U. S. Bureau of Mines. U. S. A.

15. Study of the Chemical Composition of Gasolines Containing Unsaturated Hydrocarbons.
Prof. A. V. Topchiev et al. U. S. S. R.

16. Physical Properties and Molecular Structure in Fused Polycyclic Hydrocarbon Systems.

18. New Developments and Principles of the Work of the API Research Project 6 on Hydrocarbons in Petroleum. Carnegie Institute of Technology. U. S. A.

19. Composition of Chromatographic and Thermal Diffusion Fractions of Typical Asphalts.
The Texas Co. U. S. A.

20. The Constitution of High-Molecular-Weight Petroleum Products, Especially of Asphaltic Bitumen.
Deutsche Erdol AG. Germany

***21 Research on Asphaltenes and Asphaltic Crudes.**
Stazione Sperimentale per i Combustibili. Italy

22. Evaluation of Gear Oils under Conditions of Boundary Lubrication.
Dr. Ing. G. Schluttze et al. Germany

23. Laboratory Screening Tests for Lube Oil Detergents and Dispersants.
Lubrizol Corp. U. S. A.

DAILY PROGRAM

SATURDAY, MAY 30		
9:30 a.m.—5:00 p.m.	Registration	Coliseum
SUNDAY, MAY 31		
9:30 a.m.—5:00 p.m.	Registration	Coliseum
3:00 p.m.	Opening session followed by informal reception	Waldorf-Astoria
12:00 noon—5:00 p.m.	*Ladies' headquarters open	Waldorf-Astoria
MONDAY, JUNE 1		
8:30 a.m.—5:00 p.m.	Registration	Coliseum
9:15 a.m.—12:00 noon	Technical sessions	Coliseum
1:00 p.m.	Ladies' luncheon	Waldof-Astoria
2:00 p.m.—4:45 p.m.	Technical sessions	Coliseum
5:30 p.m.—6:30 p.m.	General lecture	Carnegie Hall
TUESDAY, JUNE 2		
9:15 a.m.—12:00 noon	Technical sessions	Coliseum
2:00 p.m.—4:45 p.m.	Technical sessions	Coliseum
5:30 p.m.—6:30 p.m.	General lecture	Carnegie Hall
WEDNESDAY, JUNE 3		
9:15 a.m.—12:00 noon	Technical sessions	Coliseum
2:00 p.m.—4:45 p.m.	Technical sessions	Coliseum
2:30 p.m.	Ladies' theatre party	
5:30 p.m.—6:30 p.m.	General lecture	Carnegie Hall
8:00 p.m.	Banquet	Waldorf-Astoria
THURSDAY, JUNE 4		
9:15 a.m.—12:00 noon	Technical sessions	Coliseum
2:00 p.m.—4:45 p.m.	Technical sessions	Coliseum
5:30 p.m.—6:30 p.m.	General lecture	Carnegie Hall
8:45 p.m.	Concert	Carnegie Hall
FRIDAY, JUNE 5		
9:15 a.m.—12:00 noon	Technical sessions	Coliseum
11:00 a.m.—6:00 p.m.	Exposition	Coliseum
2:00 p.m.—4:45 p.m.	Technical sessions	Coliseum
5:30 p.m.—6:30 p.m.	Closing session	Carnegie Hall

How to Register

The registration fee for the Fifth World Petroleum Congress is $15 (U.S.). Each registrant may register one member of his family for $7.50. But if other members of the family wish to take part in any Congress activities (other than tours), they must [register and] pay the full $15. Registration facilities will be open at the Coliseum starting Friday, May 29 (see Daily Program above). However, oil men planning to attend are urged to register in advance by mail. Registration forms are available from: Fifth World Petroleum Congress, 527 Madison Ave., New York 22, N.Y.

ARE YOU GETTING YOUR SHARE OF THE HIGH OCTANE MARKET?

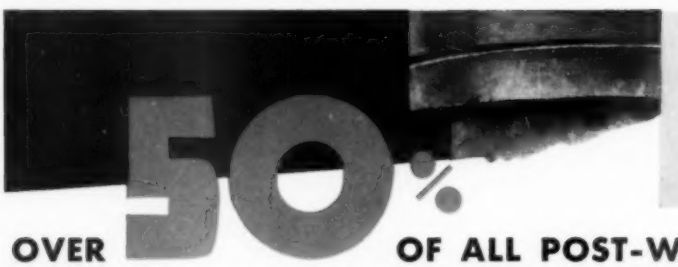
The consumption of Alkylate is growing for both government and civilian use, and this demand is expected to continue, at least into the middle 1960s. To get your share of the high octane market, consider adding an Alkylation Unit to your facilities as soon as possible.

The Oil and Gas Journal says, "Of the five typical high-quality blends which go into premium gasoline, alkylate is by far the best performer . . . more and more refiners are being pushed to include alkylate in their motor fuels. Heavy competition . . . is responsible for the new emphasis on alkylation."

WHY ALKYLATE IS THE KEY TO CURRENT GASOLINE BLENDS . . .

	Research octane (RON)	Motor octane (MON)	Sensitivity (RON minus MON)	Road octane (Union town)
Alkylate	103.0	104.5	−1.5	107.5
Reformate extract	103.7	94.0	9.7	103.5
C_7 plus reformate	103.0	93.5	9.5	102.5
C_8 plus reformate	100.0	91.7	8.3	100.0
Catalytic cracked	99.0	87.5	11.5	98.0

Reprinted courtesy The Oil and Gas Journal (Aug. 4, 1958)



OVER 50% OF ALL POST-WAR HF ALKYLATION UNITS OPERATING IN NORTH AMERICA WERE DESIGNED, ENGINEERED AND BUILT BY TRECO*

The Refinery Engineering Company has designed, engineered and constructed more HF alkylation units than all other companies combined.

THE TRECO LIST INCLUDES:

Shell Oil Company of Canada	1500 BPSD
NCRA	1522 BPSD
Cosden Petroleum Company	2068 BPSD
DX-Sunray (Tulsa)	2470 BPSD
DX-Sunray (Duncan)	3500 BPSD
CRA	1106 BPSD
Anderson-Prichard Oil Corp.	2150 BPSD
Bell Oil & Gas Company	1000 BPSD
The Carter Oil Company	2300 BPSD

Treco, with an outstanding record of fast refinery completion, can have your alkylation unit on stream QUICK. A telegram, telephone call or letter will bring complete information.

*to September 30, 1958

....talk with the TRECO man.....

TRECO

A DIVISION of VITRO CORPORATION of AMERICA

The REFINERY ENGINEERING Company

FARMINGTON NEW YORK TULSA TORONTO

24. Some European Questions on Multigrade Lubricating Oils.
Societa Lombarda Petroli. Italy

25. Contribution to the Investigation of Some Factors Affecting Dielectric Behaviour of Mineral Oils.
L. Chiabotto. Italy

26. Relationships of the Physical Properties of Hydrocarbons. V. G. Aranda. Spain

27. A Contribution to Viscometry; Hydrodynamic Study on Capillary Viscometry.
Showa Oil Co., Ltd. Japan

28. On the Oiliness of Lubricants Measured in Various Atmospheres.
Tokyo University; Tokyo Metropolitan University; Tokyo Technical University; Nippon Oil Company; Mitsubishi Oil Co. Japan

29. The Ultrasonic Velocity in Hydrocarbons and their Mixtures in Relation to their Surface Tension.
Delft Technical University. The Netherlands

****30. Viscosity—Temperature Relationships of Lubricating Oils.**
The International Committee on Rheology. International

31. Some Specific Aspects of Extraction-Asphalts in the Light of Extended Testing Methods.
Mgr. Inz. L. Kossowicz. Poland

***To be presented in a separate one-day symposium on this subject and printed as part of Section V.*

Section VI
Utilization of Petroleum Products

***1. French Solution to the Problems of Multifuel Engines.**
Societe Grossol; Institut Francais du Petrole. France

2. Development of German Multifuel Diesel Engines and their Significance.
Battele Institute, Frankfurt. Germany

***3. New Developments in the Technique of Free Piston Gasifiers Obtained by Use of Post-Combustion, Supercharging, and Twinning. Application to the Petroleum Industry.**
Societe Industrielle Generale de Mecanique Appliqué. France.

4. Swiss Experience with Fuel Additives in Gas Turbines.
Brown, Boveri & Cie.; Escher Wyss AG; Oerlikon Engineering Co.; Sulzer Bros., Ltd. Switzerland

5. Advances in Gas Turbines and Free Piston Engines and their Effect on the Petroleum Industry.
The Texas Co. U. S. A.

6. Economic Aspects of Raising Compression Ratio and Octane Quality.
Standard Oil Co. (Ind.). U. S. A.

7. Comparison of Performance and Octane Number Requirements of American and European cars.
Mobil Oil Co., Ltd.; Mobil Oil AG; Mobil Oil Italiana S. P. A.; Mobil Oil Francaise. Germany

8. Road Octane Number of Past, Present and Future Gasolines.
Esso Research, Ltd. Gt. Britain

9. Octane Requirements of Total Passenger Cars in Italy.
Ente Nazionale Idrocarbini. Italy

10. Antiknock Compounds—Research, Development, and Refinery Application.
Ethyl Corp. U. S. A.

11. A Review of Research on Abnormal Combustion Phenomena in Internal Combustion Engines.
Shell Oil Co. U. S. A.

12. Oxidation Inhibitors for Modern Fuels.
Shell Development Co. U. S. A.

13. Investigations into the Composition of Diesel Engine Exhausts.
The British Petroleum Co., Ltd. Gt. Britain

14. Small Equipment for Engine Testing of Jet Fuels.
Dr. G. Spengler. Germany

15. New Soap-Thickener System Extends Range of Multipurpose Greases.
Esso Research & Engineering Co. U. S. A.

16. Non-Soap Lubricating Greases.
Standard Oil Co. (Ind.). U. S. A.

17. The Development of Modern Hydraulic and Steam Turbine Oils in View of Increased EP Requirements.
BP Benzin & Petroleum AG. Germany

18. Colloid Aspects of the Performance of Oil-Soluble Soaps as Lubricant Additives.
U. S. Naval Research Laboratory. U. S. A.

19. The Bearing Performance and Elastic Properties of Polymer Thickened Lubricating Oils.
Esso Research & Engineering Co. U. S. A.

20. Synthetic Additives for Lubricating Oils. Influence of Additive Structure on their Activity.
Prof. P. I. Sanin et al. U. S. S. R.

21 The Mechanism of Boundary Lubrication with Special Reference to Titanium.
Massachusetts Institute of Technology. U. S. A.

22. Cutting Fluids. The Texas Co. U. S. A.

23. Effects of High Temperature on Friction and Wear.
California Research Corp. U. S. A.

24. Trends in Marine Lubrication.
Mobil Oil Co., Ltd. Gt. Britain

25. Clean, Efficient Combustion of Heating Oil.
Esso Research & Engineering Co. U. S. A.

26. Industrial Applications of Residual Fuel Oil.
Esso Petroleum Co., Ltd. Gt. Britain

27. Durability of Bitumen in Theory and Practice.
Koninklijke/Shell Laboratorium; N.V. De Bataafsche Petroleum Maatschappij. The Netherlands

29. Road and Laboratory Experiments on Asphalt from Western Hemisphere and Middle East Crudes.
Esso Research, Ltd. Gt. Britain

30. The Properties of Petroleums that Supply World Trade Especially Venezuelan Petroleums.
Ministry of Mines & Hydrocarbons. Venezuela

Section VII
Engineering, Equipment, & Materials

1. Pollution and Prevention Through Design and Operation.
Shell Refining & Marketing Co., Ltd. Gt. Britain

2. Pollution Prevention Through Design and Operation. General Petroleum Corp. U. S. A.

3. Decomposition of Naphthenic Acids by Micro-Organisms in a Refinery Effluent Disposal System.
Shell Refining & Marketing Co., Ltd. Gt. Britain

4. Erosion in Gas-Solid Systems.
Koninklijke/Shell Laboratorium; N.V. De Bataafsche Petroleum Maatschappij. The Netherlands

5. Dynamics and Control of Distillation Columns.
Koninklijke/Shell Laboratorium; N.V. De Bataafsche Petroleum Maatschappij. The Netherlands

6. Application of Hydraulic Systems in Petroleum Industry.
Delft Technical University. The Netherlands

7. Reconciliation of American and European Steel Specifications.
Esso Research & Engineering Co. U.S.A.

8. Some Aspects of Corrosion Prevention in a Refinery. The British Petroleum Co., Ltd. Gt. Britain

9. Metallurgical Aspects of Quality Control in Production of Petroleum Equipment.
Kellogg International. Gt. Britain

10. Epoxy Resin Coatings in the Oil Industry.
Shell Development Co. U. S. A.

11. Fire-Side Corrosion in Oil-Fired Boilers.
The British Petroleum Co., Ltd. Gt. Britain

12. Corrosion and its Prevention for Oil Tankers.
Transportation Technical Research Institute; Nippon Corrosion Engineering Co., Ltd. Japan

13. Advances in Process Plant Engineering.
M. W. Kellogg Co. U. S. A.

14. Use of a Large Computer in Making Economic Designs.
Esso Research & Engineering Co. U. S. A.

15. Data-Logging, Scanning, and Information Systems get All-Out Test at New Tidewater Delaware Refinery. Tidewater Oil Co. U. S. A.

16. Principles of Improving Flow Reactor Efficiency in Petrochemical Processes.
Prof. A. N. Planovsky; Prof. D. I. Orochko. U. S. S. R.

***17. The Present Status in France in the Utilization of Steel Tubing Designed to Resist Special Corrosion Conditions and in the Measurement of Corrosion.**
Societe des Forges et Ateliers du Creusot; Acieries de POompey; Compagnie des Ateliers et Forges de la Loire; Societe Lorraine-Escaut; Societe Vallourec; Acieries d'Ugine; Compagnie des Tubes de Normandie. France

18. Reinforcements, Round Holes and Spherically Curved Parts of Pressure Vessels.
Government Supervision Service for Boilers & Pressure Vessels. The Netherlands

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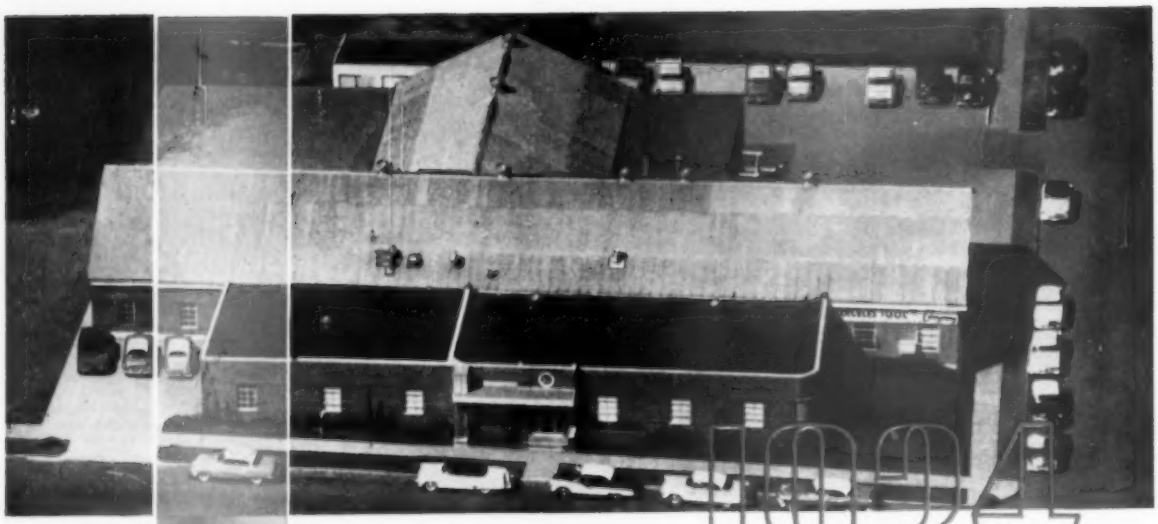
To Get Preprints of Papers . . .

Preprints of the technical papers will be available at the Congress. Each registrant will be entitled to a free set of the preprints for any one of the ten sections. However, he must register with the Congress and select the section he wants before Feb. 28, 1959, to insure that a set of preprints will be available to him at the Coliseum in advance of the meeting. Preprints from other sections may be reserved by advance purchase, or purchased at the Congress for 25c a copy. Forms for registering, and for reserving preprints, may be obtained from Fifth World Petroleum Congress, 527 Madison Ave., New York 22, N. Y.



1924

IT HAPPENED THAT YEAR . . . REMEMBER?

It was 1924. French troops evacuated the Ruhr . . . Calvin Coolidge was returned to office. Walter P. Chrysler developed a new motor car bearing his name . . . the Earlsboro, Oklahoma Oil Field was discovered with reserves estimated at 140,000,000 barrels.

In 1924 S. P. "Dutch" Tschappat, who had come from Ohio to work in the oil industry, formed a partnership with Harold "Casey" Callahan, a drilling contractor, forming Hercules Tool Company. The firm was incorporated in 1938 with Tschappat as president and Callahan as vice president. The company started with the now well known Hercules Tubing Hanger and Tubing Anchor, both developed and patented by Tschappat. These were soon accepted as standard equipment throughout the industry.

Other equipment patented by Tschappat includes the Hercules Pumping and Flowing Tee, Cross Tee and various types of overhead packed casing and tubing heads. Hercules was first to produce a well head with packing above slips. At first skeptical, operators soon accepted it enthusiastically and now every well head manufacturer uses the Hercules method of overhead packing.

In 1938, Hercules introduced another new and revolutionary product. This is the Hercules Duplex Polished Rod Stuffing Box (C. F. Moseley patent) and is the only one using cone shaped packing. It is used by almost all producing companies in practically every oil field.

From their initial sales, in a limited area of Kansas and Oklahoma, the company has grown into a major manufacturer of production equipment. With knowledge gained from a third of a century, Hercules looks forward with confidence to the progress of the industry's second century.

HERCULES TOOL COMPANY

Manufacturers of Oil Field Equipment

GENERAL OFFICES AND PLANT • TULSA, OKLAHOMA

Export Representative Oil Field Equipment Co., Inc.

90 West Street, New York 6, N. Y.

19. Causes and Prevention of Explosions in Petroleum Processes.
Standard Oil Co. (Ind.). U. S. A.

20. Fire Protection in Petroleum Industries.
Ing. H. Brunswig. Germany

22. A Theory of Complex Recycle Processes for Petrochemical Synthesis.
Prof. M. F. Nagiev. U. S. S. R.

23. Noise Problems in a Large Refinery
Esso Petroleum Co., Ltd. Gt. Britain

Section VIII
Transportation & Distribution

1. The Role of Sea Transport in the Petroleum Industry.
Standard Oil Co. (N. J.). U. S. A.

2. Operations Research Applied to Marine Transportation and Tonkage Problems.
Creole Petroleum Corp.; Esso Research & Engineering Co. Venezuela

3. Marine Transportation of Liquid Methane.
Continental Oil Co. U. S. A.

4. The Significance of the Increasing Number and Size of Diesel Tankers for Economic Transportation of Fuel.
Burmeister & Wain. Denmark

***5. Progress and Dimensions of Tankers.**
Compagnie Navale des Petroles. France

6. Industrial Methods for Building Oil Tanks in the Soviet Union.
Prof. E. A. Ignatchenko et al. U. S. S. R.

7. Earthen Reservoirs Storage of Petroleum.
Creole Petroleum Corp. Venezuela

8. The Use of Mined Caverns for the Storage of Liquefied Light Hydrocarbons.
Sun Oil Co. U. S. A.

***9. Techniques Employed in the Study and in the Development of Subterranean Gas Storage in Water-Drive Reservoirs.**
Institut Francais du Petrole; Gaz de France; Societe Nationale des Petroles d'Aquitaine. France

10. Engineering and Theoretical Studies of Static Electricity in Fuels.
Esso Research & Engineering Co. U. S. A.

11. Experience in Turbine Fuel Quality Control.
Shell Oil Co. U. S. A.

12. Microwave Communication in Pipeline Operation.
Platte Pipe Line Co. U. S. A.

13. Automation in Pipeline Transportation of Liquid and Gaseous Hydrocarbons.
Societa Nazionale Metanodotti. Italy

14. Scheduling and Control of Multiple Pipeline Tenders by Electronic Computer.
Plantation Pipe Line Co. U. S. A.

15. Construction, Operation and Maintenance of Offshore Pipelines.
Collins Construction Co. U. S. A.

16. Electrical Heating of Pipelines Carrying Viscous Crudes.
The British Petroleum Co., Ltd. Gt. Britain

17. Synthetic Pipeline Coatings.
Esso Research & Engineering Co. U. S. A.

18. Custody Transfer by Displacement Meters.
Humble Pipe Line Co. U. S. A.

19. The Truck Dispatching Problem.
Rand Corp.; Atlantic Refining Co. U. S. A.

20. Current Marketing Research Methodology in the American Petroleum Industry.
Standard Oil Co. (Ind.). U. S. A.

Section IX
Operations Research, Statistics, & Education

1. Petroleum's Contribution to Modern Society.
Hamline University. U. S. A.

2. Statistical Data Required for Industrial Management.
The United Nations. U. S. A.

3. Basic Factors that Will Shape Future Oil Requirements and Supplies.

4. The Role of Petroleum in World Energy Supplies.
W. Z. Levy. U. S. A.
Standard Oil Co. of California. U. S. A.

5. The Future Energy Requirements of the World and the Importance of Petroleum as One of the Forms of Primary Energy.
P. R. de Ryckere. Belgium

6. The Search for Petroleum Outside the United States. Chase Manhattan Bank. U. S. A.

7. Monetary Aspects of World Oil.
First National City Bank of New York. U. S. A.

8. On Multiple Rates of Return.
Shell Oil Co. U. S. A.

9. Economics of Refinery Location in the United States. S. M. Livingston. U. S. A.

10. Current Economic Trends in Size and Location of Refineries.
P. H. Frankel. Gt. Britain

11. A Method for Solving the Fixed-Charge Problem and some of its Applications.
N. V. De Bataafsche Petroleum Maatschappij. The Netherlands

12. Methods of Economic Analysis in the Petroleum Industry, Including Field Development.
Esso Petroleum Co., Ltd. Gt. Britain

13. Mathematical Tools in Optimization of Operations.
Tidewater Oil Co. U. S. A.

14. Making Use of Exploratory and Oil Developments Statistical Data.
Eng. E. Ospina-Racines. Colombia

15. Information Research—A New Tool for Petroleum Progress.
Esso Research & Engineering Co.; Jersey Production Research Co. U. S. A.

18. Higher and Secondary Petroleum Education in the Soviet Union.
Prof. K. F. Zhigach et al. U. S. S. R.

19 Sources of Statistical Information for the Petroleum Industry.
Standard Oil Co. of California. U. S. A.

20. India's Energy Requirements and the Role of Petroleum.
Burmah-Shell Oil Storage & Distributing Co.; Ministry of Steel, Mines & Fuel. India

Section X
Symposium on Atomic Energy

1. Probable Impact of Atomic Energy on the World Petroleum Industry.
Dr. Robert E. Wilson. U. S. A.

2. Peaceful Uses of Atomic Explosives.
University of California. U. S. A.

3. Technical and Economic Prospects of Atomic Energy in the Petroleum Industry.
Schlumberger Well Surveying Corp. U. S. A.

4. A Novel Approach to Control of Separation Processes Using Radioisotopic Compounds.
California Research Corp. U. S. A.

5. Recoil Tagging of Petroleum Hydrocarbons.
Shell Oil Co. U. S. A.

6. Radioisotopes in Fuel and Lubricant Research.
Esso Research & Engineering Co. U. S. A.

7. The Use of Short-Lived Tracers in Petroleum Applications.
Tracerlab, Inc. U. S. A.

***8. Some Special Aspects of Radiolysis of Hydrocarbons in Liquid Phase.**
Compagnie Francaise de Raffinage. France

9. Radiation Promoted Hydrocarbon Reactions.
Esso Research & Engineering Co. U. S. A.

10. Radiation Chemistry of Light Hydrocarbons.
Humble Oil & Refining Co. U. S. A.

11. Studies in the Radiation Chemistry of Petroleum Hydrocarbons and the Applications of Nuclear Radiation to the Petroleum Industry and Petrochemical Synthesis.
Prof. A. V. Topchiev et al. U. S. S. R.

12. Effect of Gamma Irradiation on the Thermal Decomposition of Light Paraffinic Hydrocarbons.
Esso Research, Ltd. Gt. Britain

13. Effect of Radiation on the Stability of Synthetic Lubricants.
Shell Development Co. U. S. A.

14. Lubrication Requirements of Nuclear Power Plants.
Shell Petroleum Co., Ltd. Gt. Britain

15. Use of the Methods of Atomic Physics in Oil Prospecting and Production.
Prof. G .N. Flerov et al. U. S. S. R.

16. Nuclear Well-Logging in Exploration and Production Problems.
Gulf Research & Development Co. U. S. A.

17. Recent Advances in the Use of Nuclear Physics in Oil Well Surveys.
Well Surveys, Inc. U. S. A.

API Refining Meeting Is Open to Congress

All members of the Congress will be welcome (without registration fee) at the midyear meeting of American Petroleum Institute's Division of Refining, in New York, May 27-29, 1959, at the Hotel Statler.

Ten technical papers will concern analytical chemistry. Nine will be on oil processing, and five on corrosion. Two or three papers each will be devoted to electrical equipment, composition of oil, instrumentation, oil products, and training.

How to Tour the U.S. Oil Industry

Tour Number	Description	Tour dates: Train or bus	Tour dates: Plane	Cost, per person: Train or bus	Cost, per person: Plane
1	**International Petroleum Exposition, Tulsa.** More than 1,500 exhibits showing technical advances in the oil industry (pages 46 to 69).	May 18-26	May 20-24	$358	$286
2	**Western States Geological Survey and visit to International Petroleum Exposition, Tulsa.** Ten-day plane tour to New Mexico, Wyoming, and Montana to inspect uranium mining, surface geology, and oil production.	—	May 20-29	—	$643
3	**Chicago research centers.** Visit to research labs of Standard Oil Co. (Indiana), Sinclair Research Laboratories, Inc., and Universal Oil Products Co.	May 24-27	May 24-26	$222	$156
4	**Brookhaven National Laboratory,** nuclear science research center of the Atomic Energy Commission, at Upton, Long Island, N.Y.	May 28	—	$11	—
5	**Shippingport Atomic Power Station.** This plant, 25 miles from Pittsburgh, is the first full-scale atomic power station for commercial use.	—	May 29	—	$77
6	**Schlumberger Research Center.** The laboratories of Schlumberger Well Surveying Corp., at Ridgefield, Conn., research new surveying tools and methods of interpretation.	May 29 (2 tours) June (2 tours)	—	$7	—
7	**Tidewater Oil Co. refinery.** The new 130,000 b/d plant at Delaware City, Del., is one of the most modern in the world.	May 30 June 6-8 (3 tours)	—	$11	—
8	**Sightseeing tour of Washington, D.C., and visit to Tidewater Oil Co. refinery.** Full day of sightseeing in the nation's capital, plus visit to one of the world's most modern refineries.	June 6-9	—	$123	—
9	**Gulf Coast industrial inspection tour.** Five-day tour, sponsored by oil companies, of oil fields, refineries, port and offshore facilities from Houston to New Orleans.	—	June 7-11	—	$368
10	**Esso Research & Engineering Co.,** Linden, N.J. Visit to the largest oil research center in the U.S.	June 8 (2 tours) 9 (2 tours)	—	$6	—
11	**Great Lakes industrial tour, to Detroit and Chicago.** Four-day tour of laboratories and plants of Ethyl Corp. and Ford Motor Co. —and research labs of Standard Oil Co. (Indiana), Sinclair Research Laboratories, Inc., and Universal Oil Products Co.	June 8-13	June 9-12	$299	$249
12	**Sightseeing in New York City.** Choice of 7 tours, ranging from a visit to Lower New York and Chinatown, to a Night Club Tour, which starts with dinner and floor show at the Copacabana.	May 30-31 June 6-7	—	$3 to $16 (depending on tour)	—

NOTES: Data in the table above give merely the highlights of tours, with many details omitted. For example, some dollar amounts include transportation fare only. Others include meals, hotel, services of interpreters, etc. Train fares shown are for one person in a roomette. Costs include U.S. transportation tax (which does not apply if tours are purchased outside the U.S. in conjunction with transportation to and from the U.S.). Some partial tours and combinations are omitted. All tours shown originate in New York City. Data subject to change.

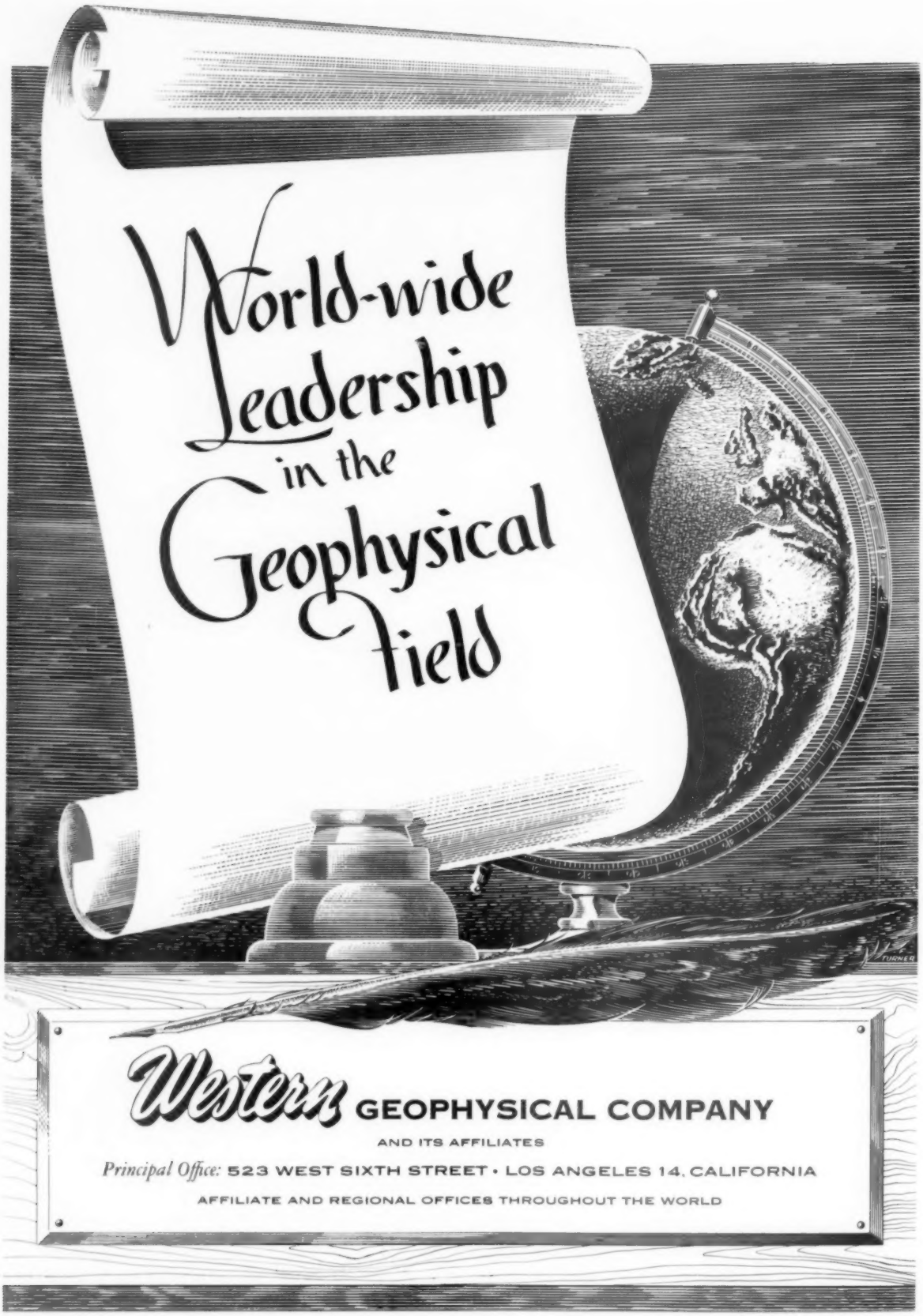
FOR FULL DETAILS, including 40-page brochure, contact: American Express Co., Domestic Travel Dept., 65 Broadway, New York 6, N.Y., U.S.A., or the nearest American Express Co. office. The company will have a service bureau at the Coliseum during the Congress.

"A truly dramatic shift in product development has taken place in the field of petrochemicals. A short time ago, the industry's chemical business was a sideline. But today, with the development of products such as butyl rubber, polypropylene, fuel and lube-oil additives, alcohols, ethers, aromatics and many others, this stepchild business has become a full-fledged member of the family — and one to be reckoned with. In petrochemicals, the real leader is the one who finds new products, and new uses for new products."

—M.J. Rathbone, President, Standard Oil Company (New Jersey)

Esso

STANDARD OIL COMPANY (NEW JERSEY)
AND AFFILIATED COMPANIES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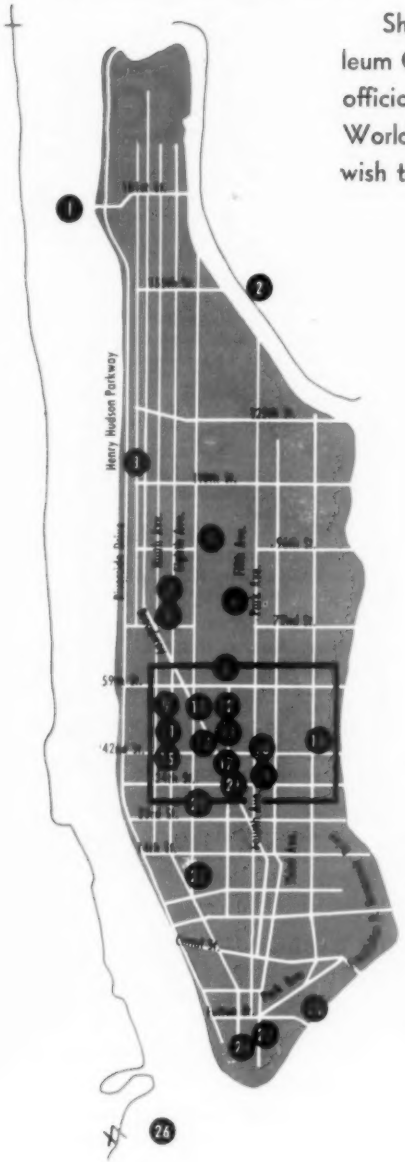
What to See—and Where to Stay

Shown below are the hotels recommended by the Fifth World Petroleum Congress. With reservations not guaranteed after May 15, Congress officials are urging oil men to contact: Hotel Reservation Bureau, Fifth World Petroleum Congress, 90 East 42nd Street, New York 17, if they wish to stay at one of these . . .



New York Hotels

1 George Washington Bridge
2 Yankee Stadium
3 Columbia University
4 Central Park
5 Central Park Zoo
6 Metropolitan Museum of Art
7 Hayden Planetarium
8 American Museum of Natural History
9 COLISEUM (5th Congress Headquarters)
10 Carnegie Hall
11 Madison Square Garden
12 Museum of Modern Art
13 Rockefeller Center
14 United Nations
15 McGraw-Hill Building
16 Times Square
17 New York Public Library
18 Grand Central RR Station
19 Convention & Visitors Bureau
20 Pennsylvania RR Station
21 Empire State Building
22 Greenwich Village
23 Wall Street
24 New York Stock Exchange
25 Brooklyn Bridge
26 Statue of Liberty

Want a Subway Map?
Maps of New York's complex subway system will be available at Congress headquarters and at Petroleum Week's booth in the Coliseum.

Where to Dine in New York City

Listed below are 24 of the better restaurants on Manhattan Island—many of them within walking distance or a short taxi ride of the Coliseum. This sampling is taken from a longer list recommended by the New York Convention and Visitors Bureau (the full list will be available at the bureau's Coliseum headquarters). Most of the restaurants shown are in the higher-price classification. All are air-conditioned. There are dozens of other excellent restaurants in different price ranges in New York City.

Additional selections appear in the "Guide to Good Dining" published by The New York Times, 229 West 43rd St.

34th St. to 59th St. West of Fifth Avenue

CAFE LOUIS XIV—15 West 49th St. CI 6-5800. Excellent French Food. Pompadour Gallerie for cocktails. Lunch a la carte from $2.45. Dinner from $6.25 and a la carte. Music at dinner. Closed Sunday.

HOLLAND HOUSE TAVERNE—10 Rockefeller Plaza. CI 6-5800. Netherlands atmosphere. Javenese rice curry a specialty. Bar. A la carte lunch from $1.65. Dinner from $2.10. Closed Sunday.

LES PYRENEES—234 West 48th St. CI 6-0044. Specialties of Southern France. Escalop of veal Basquaise, Boeuf braise Beaunoise. Lunch from $1.80. Dinner from $4. Bar and Cocktail lounge. Open daily.

MIYAKO—20 West 56th St. CO 5-3177. Sukiyaki prepared at your table. Fried shrimp and other Japanese Delicacies. Lunch from $2. Dinner from $3. Bar. Closed Monday.

PENTHOUSE CLUB—30 Central Park South. PL 9-3561. Panoramic view of Central Park and upper Manhattan. French and American cuisine. Lunch from $1.75. Dinner from $4. Bar. Entertainment. Closed Sunday.

RAINBOW ROOM—30 Rockefeller Plaza. CI 6-5800. Cocktails and view of New York from 65th floor of RCA Building. Music. Dinner from $3. Open 4:30 to 9 p.m. Closed Sunday.

RUSSIAN TEA ROOM— 150 West 57th St. CO 5-0947. Authentic Russian cuisine. Theater and ballet rendezvous located next to Carnegie Hall. Lunch from $1.50. Dinner from $2.75. After-theater supper. Bar. Open daily.

TOOTS SHOR—51 West 51st St. JU 2-6000. Popular with sports celebrities. American cooking. Roast beef, lobster, chicken pot pie. A la carte lunch from $1.95. Dinner from $2.75. Bar. Open daily.

TWENTY-ONE—21 West 52nd St. JU 2-7200. Fine American and French food. All a la carte. Lunch entrees from $4. Dinner entrees from $5. Bar. Closed Sunday.

WHYTE'S 57th STREET RESTAURANT—344 West 57th St. JU 6-7900. Uptown branch of old New York restaurant. Outdoor garden. Finnan Haddie Whyte. Charcoal-broiled steaks. A la carte lunch from $2. Dinner from $2.40. Bar. Closed Sunday.

34th St. to 59th Street East of Fifth Avenue

BRASS RAIL—Fifth Ave. at 43rd St., MU 7-5878. **100 Park Ave. at 40th St.,** LE 2-1210. Hearty American fare. Virginia ham, roast beef, cheese cake. Lunch from $1.45. Dinner from $2.65 and a la carte. Bar. Open daily.

CAFE CHAUVERON—139 East 53rd St. PL 1-6480. Fine French cuisine. Choice wines and liqueurs. A la carte lunch from $2.25. Dinner from $3.25. Closed Sunday.

CAMILLO RESTAURANT—160 East 48th St. PL 5-4388. Excellent Northern Italian cuisine. Jumbo scampi. Lunch from $3. Dinner a la carte only. Bar. Closed Sunday.

CHATEAUBRIAND—131 East 54th St. PL 9-6544. Classic French cuisine. Game in season and a fine wine cellar. Lunch from $3.50. Dinner from $6. Also a la carte. Cocktail lounge. Closed Sunday.

DELEGATES DINING ROOM, UNITED NATIONS—First Ave. at 42nd St. PL 4-1234. Public admitted by reservation. Steak, roast beef, lobster are specialties. Lunch from $1.80. A la carte lunch from $1.50. Closed Saturday and Sunday.

EMBERS—161 East 54th St. PL 9-3228. Superior jazz played by leading musicians; also dinner music. Steaks, chops, barbecued spare ribs. Dinner a la carte from $2.75. Bar. Open daily.

GRIPSHOLM—324 East 57th St. PL 9-6260. Excellent Swedish food. Smorgasbord and Swedish pancakes. Dinner from $2.75. Lunch from $1.75. Bar. Open daily.

LE PAVILLON—111 East 57th St. PL 3-8388. One of the country's finest French restaurants. Lunch from $3.75. Dinner from $4.50. All a la carte. Cocktails. Reservations required. Closed Sunday and Monday.

Greenwich Village

BILL BERTOLOTTI'S—85 West 3rd St. GR 7-3230. Oldest restaurant in Greenwich Village. Residence of Edgar Allen Poe. Italian and American cuisine. Dinner from $3.50. A la carte from $2. Bar. Dancing. Closed Monday.

LUCHOW'S—110 East 14th St. GR 7-4860. German Viennese restaurant established in 1882. Sauerbraten and game in season. Lunch from $1.60. Dinner from $3.60. Bar. Closed Monday.

Above 60th Street

CARLTON HOUSE—Madison Ave. at 61st St. TE 8-3000. Famous Ritz-Carlton French and Continental cuisine. A la carte lunch from $2.75. Dinner from $3.50. Bar and cocktail lounge. Piano music. Open daily.

COLONY RESTAURANT—30 East 61st St. TE 8-6660. Fashionable restaurant. French cuisine. Baby lamb and grouse are specialties. All a la carte. Lunch and dinner from $4.50. Bar. Closed Sunday.

TAVERN-ON-THE-GREEN—Central Park West & 67th St. SC 4-8100. Located in Central Park. Dining and dancing nightly except Monday. American cooking. No lunch. Dinner from $3.25. Bar.

All Over Town

AUTOMATS (HORN & HARDART)—977 Eighth Ave., at 57th St., and many others. See phone directory for complete listing. Put your nickels in the slot, and out pops the food. American cooking. Inexpensive.

Entertainment Lists to Check

Detailed information on entertainment in New York is available in various booklets and magazines. Examples (the first three are published by the New York Convention & Visitors Bureau and will be available at the bureau's Coliseum headquarters):

Quarterly Calendar of Events.

Educational Tours in New York City.

Visitors Shopping Guide, published by the bureau.

Cue Magazine, weekly publication devoted to entertainment in New York, including Broadway plays, restaurants, movies, television, nightclubs, etc. (available at newsstands).

New Yorker Magazine, which has extensive weekly coverage of current plays, night life, music, art, sports, movies, etc. (available at newsstands).

Ladies Welcome, Too

The 1,000 wives of oil men expected to come to New York for the Congress will find that a week of special events has been planned by the Desk & Derrick Club of New York.

Ladies headquarters will be at the Waldorf-Astoria Hotel (Park Avenue at 49th St.). This will be open Sunday, May 31, from noon to 5 p.m. On Monday through Friday, June 1-5, the headquarters will be open from 9 a.m. to 5 p.m.

Desk & Derrick Club members who speak French, German, Spanish, Italian, and other languages will act as interpreters. They will also provide information on currency, mailing regulations, and shopping in New York.

On June 1 a luncheon and fashion show will be held for women visitors. And on June 3 there will be a special Congress matinee of a Broadway show, to be designated later.

In addition, there will be sightseeing tours of New York (below).

All of the women's activities are exclusively for those who officially register with the congress.

Sightseeing Tours for Women

Tour Number		Price	Leave	Return
	TUESDAY, JUNE 2, 1959			
1	Lower New York and Statue of Liberty	$4.95	9:00 a.m.	12:30 p.m.
2	Upper New York and Harlem	4.00	2:30 p.m.	5:00 p.m.
3	Boat cruise around Manhattan Island	2.50	1:30 p.m.	4:30 p.m.
6	All-day combination tour, incl. lunch (chiefly Tours 1 and 2)	14.25	9:00 a.m.	5:00 p.m.
	WEDNESDAY, JUNE 3, 1959			
1	Lower New York and Statue of Liberty	4.95	9:00 a.m.	12:30 p.m.
3	Boat cruise around Manhattan Island	2.50	9:00 a.m.	12:00 noon
	THURSDAY, JUNE 4, 1959			
3	Boat cruise around Manhattan Island	2.50	1:30 p.m.	4:30 p.m.
4	Hyde Park (Franklin D. Roosevelt home), Bear Mountain Park, West Point (military academy); incl. lunch	11.50	8:30 a.m.	5:30 p.m.
5	Walking tour of Wall Street area and Bronx Botanical Gardens	3.25	1:00 p.m.	5:00 p.m.
7	Museum tour (visit to three famous museums and the Hayden Planetarium)	3.95	1:00 p.m.	5:00 p.m.
	FRIDAY, JUNE 5, 1959			
2	Upper New York and Harlem	4.00	2:30 p.m.	5:00 p.m.
5	Walking tour of Wall Street area and Bronx Botanical Gardens	3.25	1:00 p.m.	5:00 p.m.
6	All-day combination tour, incl. lunch (chiefly Tours 1 and 2)	14.25	9:00 a.m.	5:00 p.m.
7	Museum tour (visit to three famous museums and the Hayden Planetarium)	3.95	1:00 p.m.	5:00 p.m.

Reservations for Ladies Tours may be made in advance with American Express Co., Domestic Travel Division, 65 Broadway, New York 6, N.Y. All tours have an English-French lecturer, and all leave from the Waldorf-Astoria Hotel, 50th St. and Park Ave., except the cruise around Manhattan Island. The tours have been planned by the Desk & Derrick Club of New York.

Weather Should Be Friendly

The odds are good that favorable weather will prevail during the Petroleum Congress May 30 to June 5.

Says Ernest J. Christie, meteorologist in charge of the New York Weather Bureau, which is armed with 87 years of statistics on New York City weather: "The first week in June is usually pleasant. Average temperature in the daytime is in the mid-70s. At night, the average low is 55 to 60 degrees (Fahrenheit). There's only a 1% or 2% possibility that the temperature will climb into the 90s. But you may expect 80-degree temperatures on about one third of the days.

"Rain? You might see some. In early June, it rains sometime during the 24-hour period about one day out of four."

Where to Telephone In New York

American Oil Co.
OXford 7-2700

American Overseas Petroleum Ltd.
OXford 7-4190

American Petroleum Institute
JUdson 6-4200

Arabian American Oil Co.
MUrray Hill 8-1300

Asiatic Petroleum Corp.
JUdson 6-5000

California Texas Oil Co., Ltd.
OXford 7-2000

Cities Service Co.
HAnover 2-1600

Creole Petroleum Corp.
PLaza 7-1230

Esso Research & Engineering Co.
WAbash 5-1600

Esso Standard Oil Co.
PLaza 7-1200

Fifth World Petroleum Congress
MUrray Hill 8-7145

Coliseum Headquarters
YUkon 6-4232

Gulf Oil Corp.
PLaza 7-0610

Women's Headquarters at Congress
Waldorf-Astoria Hotel
ELdorado 5-3000

New York Convention & Visitors Bureau
MUrray Hill 7-1300

Pan American International Oil Co.
CIrcle 6-2500

Petrofina
JUdson 6-8510

Shell Oil Co.
JUdson 6-5000

Sinclair Oil Corp.
CIrcle 6-3600

Socony Mobil Oil Co.
OXford 7-4200

Standard Oil Co. (New Jersey)
PLaza 7-3000

Standard-Vacuum Oil Co.
ROckwell 1-1000

The Texas Co.
OXford 7-8000

Tidewater Oil Co.
TEmpleton 2-7800

Exhibitors at the New York Show

Listed below are the firms that so far have made reservations for exhibit space at the Coliseum during the Fifth World Petroleum Congress. The first two floors of the building will be devoted to exhibits. Congress officials estimate that this list represents about 60% of the firms that will eventually take space.

Aero Service Corp.
Alloy Steel Products Co.
American Business Service Corp.
American Can Co.
American Cyanamid Co.
American Flange & Mfg. Co.
American Premaberg, Inc.
American Pullmax Co.
G. W. Anderson, G.M.B.H.
Armour Chemical Division
Automobiles M. Berliet
B & W, Inc.
Babcock & Wilcox Co.
Badger Mfg. Co.
Badische Anaiin & Boda Fabrik, AG
Barlod Div., National Lead Co.
Bechtel Corp.
Beckley, Haltom & Hickman
B. I. F. Industries
C. F. Braun & Co.
Brown Fintube Co.
A. M. Byers Co.
Camco, Inc.
Cameron Iron Works
Cardwell Mfg. Co.
Catalytic Construction Co.
Chemical Construction Co.
Chemical Engineering
Chemical Week
Chicago Bridge & Iron Co.
Chicago Metallizing Corp.
Chicago Steel Tank Co.
Chiksan Co., plus Well Equipment Mfg. Co. and Oil Center Tool Co.
Christensen Diamond Products Co.
Clayton Mark & Co.
Cleaver-Brooks Co.
Combustion Engineering, Inc.
Compagnia Technica Industrie Petroli
Constructions Metalliques de Provence
Continental Can Co.
Continental Oil Co.
Council of British Mfrs. of Petroleum Equipment
Cummins Engine Co.
Curtiss Wright Corp., Metals Processing Div.
Daniel Orifice Fitting Co.
Daystrom Systems, Div. of Daystrom, Inc.
Dean Hill Pump Co.
Dorr-Oliver, Inc.
Dresser Industries, Inc.
Ducon Co.
E. I. duPont de Nemours & Co.
Eastman Chemical Products, Inc.
Electrodynamic Instrument Corp.
Engelhard Industries, Inc.
Enjay Co.
Engis Equipment Co.
Esso Research & Engineering Co.
Ethyl Corp.
Fluor Corp.
Foster Wheeler Corp.
French Assn. of Petroleum Equipment Mfrs.
Garlock Packing Co.
Gebr-Boehling
General American Transportation Corp.
General Aniline & Film Corp.
General Electric Co.
General Geophysical Co.
General Mills, Chemical Division
Geophysical Service, Inc.
Gilbert & Barker Mfg. Co.
Goodyear Tire & Rubber Co. (Chemical Division)
Gorman-Rupp Co.
Grinnell Co.
Griscom-Russell
Gulf Publishing Co.
Halliburton Oil Well Cementing Co.
Hallikainen Instruments
Hammond Iron Works
Harbison-Walker Refractories Co.
Hendrick Mfg. Co.
John S. Herold, Inc.
Hewitt-Robins, Inc.
Houdry Process Corp.
Hudson Engineering Corp.
Hydril Co.
Hydrocarbon Research, Inc.
Ingersoll-Rand Co.
International Business Machines Corp.
Jarrell-Ash Co.
Johnston Testers
Johnston & Jennings Co.
M. W. Kellogg Co.
Kendavis Industries, Inc., International
R. G. LeTourneau, Inc.
Lone Star Steel Co.
Lukens Steel Co.
Lummus Co.
Magnetrol, Inc.
Martin-Decker Corp.
McEvoy Co.
Arthur G. McKee & Co.
Melrath Supply & Gasket Co.
Motorola Communications & Electronics, Inc.
Namco Machinery, Inc.
National Aluminate Corp.
Norton Co.
Oil and Gas Journal
Ralph M. Parsons Co.
Pennzoil (Div. of South Penn Oil Co.)
Petro-Chem Development Co.
Petroleum Week
Petrolite Corp.
Perkin-Elmer Corp.
Harvey Phillips Co.
Phillips Petroleum Co.
Phoenix-Rhein Rohr Corp.
Pleuger Unterwasserpumpen, G.M.B.H.
Pontex Pipe Corp.
H. K. Porter Co., Forge & Fittings Division
Pottermeter Co.
Precision Scientific Co.
Procon, Inc.
Pulsometer Engineering Co.
Raymond International, Inc.
The Refinery Engineering Co.
Reynolds Feal Co.
Rockwell Mfg. Co.
Rocky Mountain Export Co.
Royal-McBee Corp.
Ruska Instrument Corp.
Rust-Oleum Corp.
Sarco Co.
Scam Instrument Corp.
Schlumberger Well Surveying Co.
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ALL 5,000 REGISTRANTS expected at the Fifth World Petroleum Congress will be listed on this directory, which will be maintained at the Coliseum by Petroleum Week (only half of the full board is shown). The directory will have name, company, and New York hotel address, so that oil men can locate their associates quickly. Petroleum Week will also have a booth at the Congress exposition.

Reprints Available

Reprints of this report are being prepared, and will be available in February. Single copies will be sent to Petroleum Week subscribers on request without charge. Additional copies will be billed at the following rates: 1-10 copies, $1 each; 11-100, 80c each; 101-1,000, 60c each; over 1,000, 40c each. Address orders to:

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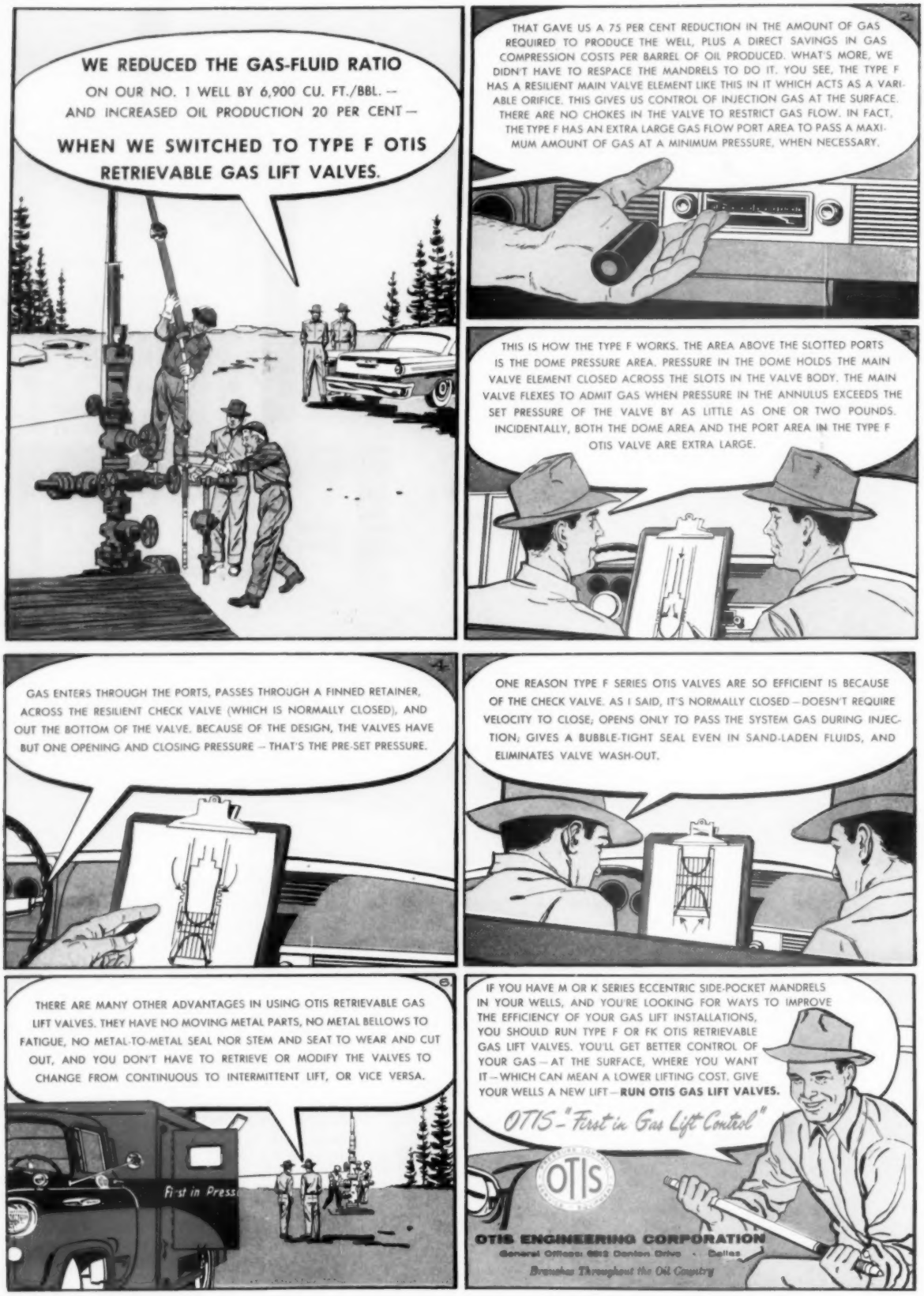
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AND INCREASED OIL PRODUCTION 20 PER CENT —
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RETRIEVABLE GAS LIFT VALVES.
2
THAT GAVE US A 75 PER CENT REDUCTION IN THE AMOUNT OF GAS REQUIRED TO PRODUCE THE WELL, PLUS A DIRECT SAVINGS IN GAS COMPRESSION COSTS PER BARREL OF OIL PRODUCED. WHAT'S MORE, WE DIDN'T HAVE TO RESPACE THE MANDRELS TO DO IT. YOU SEE, THE TYPE F HAS A RESILIENT MAIN VALVE ELEMENT LIKE THIS IN IT WHICH ACTS AS A VARIABLE ORIFICE. THIS GIVES US CONTROL OF INJECTION GAS AT THE SURFACE. THERE ARE NO CHOKES IN THE VALVE TO RESTRICT GAS FLOW. IN FACT, THE TYPE F HAS AN EXTRA LARGE GAS FLOW PORT AREA TO PASS A MAXIMUM AMOUNT OF GAS AT A MINIMUM PRESSURE, WHEN NECESSARY.
3
THIS IS HOW THE TYPE F WORKS. THE AREA ABOVE THE SLOTTED PORTS IS THE DOME PRESSURE AREA. PRESSURE IN THE DOME HOLDS THE MAIN VALVE ELEMENT CLOSED ACROSS THE SLOTS IN THE VALVE BODY. THE MAIN VALVE FLEXES TO ADMIT GAS WHEN PRESSURE IN THE ANNULUS EXCEEDS THE SET PRESSURE OF THE VALVE BY AS LITTLE AS ONE OR TWO POUNDS. INCIDENTALLY, BOTH THE DOME AREA AND THE PORT AREA IN THE TYPE F OTIS VALVE ARE EXTRA LARGE.
4
GAS ENTERS THROUGH THE PORTS, PASSES THROUGH A FINNED RETAINER, ACROSS THE RESILIENT CHECK VALVE (WHICH IS NORMALLY CLOSED), AND OUT THE BOTTOM OF THE VALVE. BECAUSE OF THE DESIGN, THE VALVES HAVE BUT ONE OPENING AND CLOSING PRESSURE — THAT'S THE PRE-SET PRESSURE.
5
ONE REASON TYPE F SERIES OTIS VALVES ARE SO EFFICIENT IS BECAUSE OF THE CHECK VALVE. AS I SAID, IT'S NORMALLY CLOSED — DOESN'T REQUIRE VELOCITY TO CLOSE; OPENS ONLY TO PASS THE SYSTEM GAS DURING INJECTION; GIVES A BUBBLE-TIGHT SEAL EVEN IN SAND-LADEN FLUIDS, AND ELIMINATES VALVE WASH-OUT.
6
THERE ARE MANY OTHER ADVANTAGES IN USING OTIS RETRIEVABLE GAS LIFT VALVES. THEY HAVE NO MOVING METAL PARTS, NO METAL BELLOWS TO FATIGUE, NO METAL-TO-METAL SEAL NOR STEM AND SEAT TO WEAR AND CUT OUT, AND YOU DON'T HAVE TO RETRIEVE OR MODIFY THE VALVES TO CHANGE FROM CONTINUOUS TO INTERMITTENT LIFT, OR VICE VERSA.
First in Press
IF YOU HAVE M OR K SERIES ECCENTRIC SIDE-POCKET MANDRELS IN YOUR WELLS, AND YOU'RE LOOKING FOR WAYS TO IMPROVE THE EFFICIENCY OF YOUR GAS LIFT INSTALLATIONS, YOU SHOULD RUN TYPE F OR FK OTIS RETRIEVABLE GAS LIFT VALVES. YOU'LL GET BETTER CONTROL OF YOUR GAS — AT THE SURFACE, WHERE YOU WANT IT — WHICH CAN MEAN A LOWER LIFTING COST. GIVE YOUR WELLS A NEW LIFT — RUN OTIS GAS LIFT VALVES.
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The Epoxies—Petrochemical 'Comers'

Epoxy resins, over 90% of which are petrochemicals, have reached a 40-million-lb.-a-year market in their short six-year "commercial" life span. Industry estimates of their 1961 market range from 75-million lb. to 400-million lb.

Epoxies are finding their way into more and more industries every day because of high physical strength, chemical resistance, lack of shrinkage on cure, and ability to withstand high temperatures, according to D. R. Beasley, of the new chemicals division of Union Carbide Chemicals Co.

Epoxy materials compete not only with other, older types of plastics, but also with metals and other nonplastic materials. For example, epoxies have replaced rivets and welding in the fabrication of our fastest jet bomber, the B-58 Hustler.

Optimism for the future grows out of expected cost reductions and technical improvements in epoxy manufacture.

The most optimistic prediction for the epoxy market in 1961, 400-million lb., is predicated on a product twice as good as today's, which will sell at substantially reduced prices compared to current ones.

These assumptions, in turn, anticipate new and different epoxies and epoxy formulations, and improved manufacturing techniques for both old and new epoxies.

The anticipated rapid growth in epoxy markets will open new opportunities for makers of aromatics and olefins—the raw materials and epoxies.

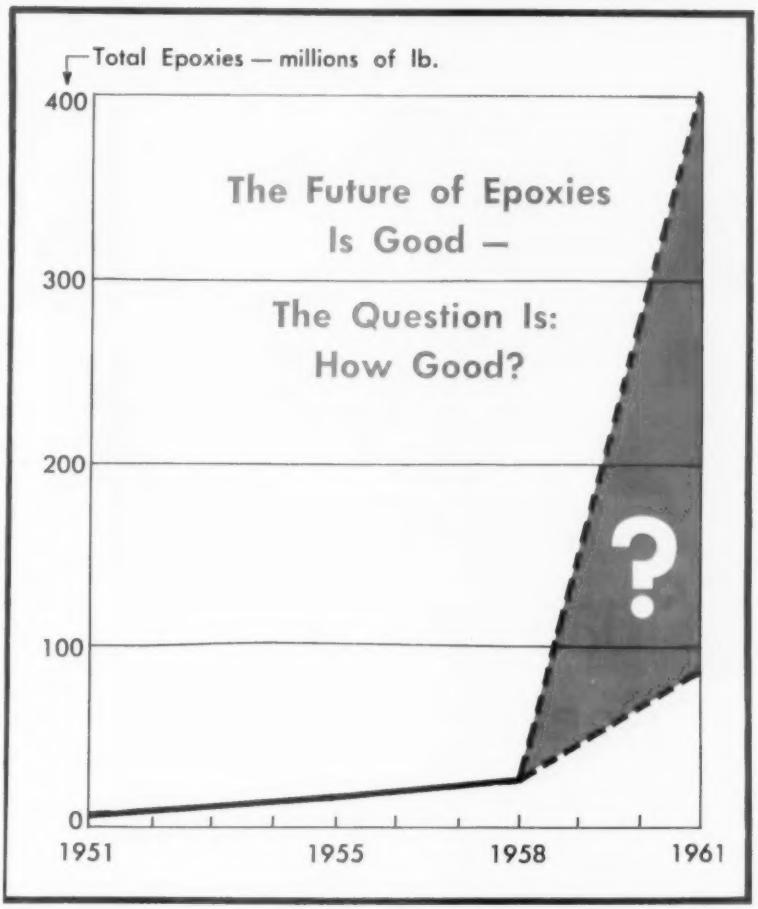
Currently, 95% of epoxy resins are made by the reaction of epichlorohydrin (made from propylene, chlorine, and water) and Bisphenol A (made from chemical condensation of benzene-derived phenol and acetone). Producers of such epoxies include Union Carbide Plastics Co. (formerly Bakelite Co.), Shell Chemical Co., Dow Chemical Co., Reichhold Chemicals Co., Ciba Co., Inc., Jones-Dabney Co., and Borden Co. There are several other, smaller producers, and even more companies that have announced plans to enter the epoxy resin field.

New epoxies, soon to be in production, will further expand the list of petrochemicals needed by this industry.

Union Carbide Chemicals Co. has developed three new epoxies which it hopes to have in full commercial production soon, according to Beasley. They are: Epoxide-201 (chemically tagged as 3,4-epoxy-6-methyl cyclohexylmethyl-3,4-epoxy-6-methyl cyclohexane carboxylate), dicyclopentadiene dioxide, and vinylcyclohexene dioxide. All three are available in drum lots.

These materials are to be produced in Union Carbide Chemicals' 10-million-plus-lb.-a-year "direct-epoxidation" plant, due to be on stream some time this spring.

The epoxies from this new plant, Beasley says, will, in turn, react with practically any kind of anhydride (such as phthalic anhydride, succinic anhydride, maleic anhydride, and others, all of which can be petroleum-derived) to produce epoxy plastics with handling characteristics and properties extending beyond those obtainable from any other currently available epoxy resins and epoxy formulations.



The raw materials for these new epoxies include butadiene, cyclopentadiene, and vinylcyclohexene, all available from petroleum sources. Further developments along these lines might extend this list to include many other four- and five-carbon petroleum olefins.

Another firm, Becco Chemical Division of Food Machinery & Chemical Corp., has also announced plans to make dicyclopentadiene dioxide.

Price reductions for epoxies, the other goal of epoxy manufacturers, have already started—but it will probably be some time before further substantial reductions are achieved.

In August, 1958, the selling price of liquid epoxy resins dropped from 77¢ to 62¢ a lb.; of solid epoxy resins from 59½¢ to 53½¢ a lb. The new

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BANK

Union Carbide materials will be introduced at about 80¢ a lb. in the beginning, but the long-term goal is to reduce this appreciably when multi-million-pound production has been achieved.

Radioisotopes Find Engine Ailments

Fuel pre-ignition can cause severe piston-ring wear in modern automobile engines, according to R. A. Abowd, Jr., of Ethyl Corp.

This wear effect was discovered during Ethyl's radioactive-tracer studies of wear in automobile engines. Unusually high wear of the top piston ring occurred in tests where pre-ignition was present, Abowd told the Society of Automotive Engineers in Detroit last week.

Most of the lubricant on the cylinder wall is either evaporated or burned when pre-ignition occurs, Abowd said.

With the piston still traveling upward, the expanding combustion gases press the piston ring against the cylinder face with unusual force. Enough heat can be generated to weld the two surfaces together. As the piston continues to move, the welded spots are torn apart, damaging the metal surfaces.

Extreme-pressure lubricants reduce the wear caused by pre-ignition. This is added evidence that this type of wear results from adhesion of metallic surfaces rather than from abrasion or corrosion, the other two basic wear mechanisms, Abowd said.

A new, accelerated wear-test procedure was developed as a result of the studies. This lab procedure is reported by Ethyl to correlate with the wear occurring in heavy-duty operation.

Another study analyzed the fuel and fuel-additive diet of each cylinder in an automobile engine.

By using radioisotopes to show which cylinders are starved and which are over-fed, these studies point the way to fuel savings, better engine performance, lower octane requirements, tailoring of fuels and additives, and design changes in carburetors and manifolds, D. E. Cooper and C. A. Hall, of Ethyl, told the SAE meeting.

The tests showed that fuel distribution among the cylinders will differ, depending on how much evaporates en route. Thus, some cylinders may not receive their full shares of high-octane components and antiknock additive, Cooper said.

What's New / IN PROCESSING

Athabasca tar sands are receiving interest from a new source, with a 20,000 b/d tar sands refinery possible within a year.

L. R. Champion, Montreal, and Okl Sands, Ltd., are considering building the plant. According to Champion, there would be a ready market for the plant's output. Oil from the sands is expected to run about 30-gravity, and would be extracted by a hot-water process.

The proposal includes a pipeline from the plant to Edmonton, Alta., where the crude would undergo further processing.

•

Richfield Oil Corp. (L.A.) and Stauffer Chemical Co. have joined to form American Chemical Corp., which will manufacture vinyl chloride monomer and its derivatives.

American Chemical will build a $7.5-million plant, the West Coast's first vinyl chloride monomer plant. Other products to be produced at the plant include poly-vinyl chloride, copolymers, ethyl chloride, and ethylene dichloride.

The plant site is adjacent to Richfield's Watson refinery, near Los Angeles. Raw materials will come from the two parent companies.

•

Aurora Gasoline Co. plans to add an alkylation unit at its Detroit refinery.

Initial capacity of the sulfuric-acid-catalyst unit will be about 2,000 b/d of debutanized motor alkylate. Major vessels, however, will be sized for an ultimate capacity of more than 3,680 b/d. The Refinery Engineering Co. is prime contractor for the unit, and will supply process and mechanical design and handle engineering and construction of all phases of the project.

Engineering is already under way, with field construction to start in about three months. Completion is set for the third quarter of this year.

•

Sun Oil Co. has placed a new sulfur recovery plant in operation at its Toledo (Ohio) refinery.

The $150,000 unit has a capacity of up to 12½ long tons of sulfur daily. Feedstock for the unit is hydrogen sulfide gas from the refinery. The gas is converted to sulfur dioxide, and then, in the presence of a bauxite catalyst, to elemental sulfur. Tears Engineers, of Dallas, prefabricated the unit, which was then shipped to Toledo.

•

Standard Oil Co. (Ind.) is now operating its new alkylation unit at its Mandan (N.D.) refinery.

The new unit will produce 1,630 b/d of motor alkylate. Feedstock for the hydrofluoric-acid-catalyst unit is combined propylene-butylene-isobutane. Additional feedstock, containing isobutane, is being purchased at Tioga, N.D., and transported the 160 mi. to Mandan by pipeline.

•

Arkansas Louisiana Chemical Corp. has begun a $3-million expansion at its Hamilton products extraction plant, at Magnolia, Ark.

Company officials say the plant is being expanded to include ethane recovery and to increase the recovery of natural gas liquids.

Delta Engineering Corp., Houston, is expected to complete the project by June.

•

Monsanto Chemical Co. has completed expansion of its Texas City styrene-monomer plant, and has announced a reduction in prices for spring.

The Texas City expansion added 40-million lb. a year to Monsanto's styrene monomer capacity, making the plant "one of the largest styrene monomer installations in the world," according to the company.

The price decrease is 0.7¢ a lb. for rubber-grade styrene monomer, based on a revised price escalation effective Apr. 1, 1959. The new base price will be 12¢ a lb.

•

Basic research into the behavior of polymeric or plastic materials in the solid state will be started soon by Case Institute of Technology, Cleveland.

The program is sponsored by the Plastics Group of the Manufacturing Chemists' Assn. MCA will furnish a $15,000 annual grant to Case for the work.

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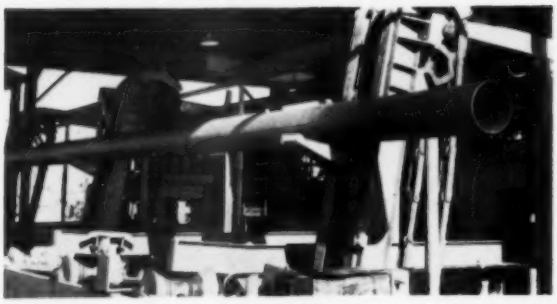
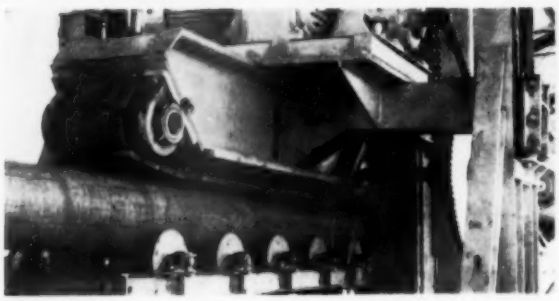
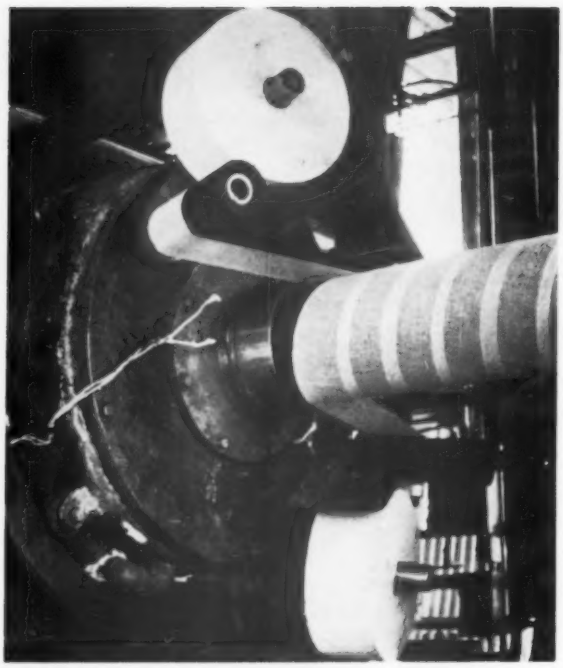


CLEANING is first step in new pipe-coating process.



COATING with new rubberized asphalt mix is next.



WRAPPING is last step, all done near the Gulf, where . . .

Offshore Pipe Gets Onshore Coating

Here's the latest in coating setups for underwater pipe: It's Brown & Root's just-opened plant near New Orleans, which coats up to 26-in. pipe with "Timcoat," the newly developed rubberized-asphalt mastic.

Timcoat, developed by Brown & Root, has been prepped as the ultimate replacement for the bulky concrete-Jacket coatings long standard for underwater lines (PW—Nov.30'56, p23).

Brown & Root—and pipeliners who have used it (PW—Sep.27'57,p51)—say that Timcoat offers high corrosion resistance, flexibility, and ductility, while providing the weight to keep the pipe "anchored" under water.

Brown & Root used a barge-mounted "plant" to apply Timcoat to small-diameter lines (12¾-in. pipe) as early as 1957. But now, with larger-diameter underwater lines planned by an increasing number of Gulf Coast operators, B&R is providing a heavier-duty, land-based plant to apply the coating.

The new plant uses a near-fully-automatic process to coat up to 45 ft. of pipe a minute, depending on pipe diameter.

Here's how the process works:

After heat-drying, pipe passes by conveyor through a shot-and-grit-blasting cleaning machine.

The pipe is then rolled automatically onto another conveyor system, where collars are attached to the ends of the pipe to prevent their being coated. (The ends remain uncoated so that field joints can be applied without difficulty out on the laying job.)

While the pipe is moving by conveyor to the coating machine, a 600-lb. pug mixture of sand, barite, barite fines, limestone fines, and liquid asphalt is mixed. The mix drops gradually into a surge hopper, where liquid rubber and glass strands are added.

Just before the pipe reaches the extruder hopper for coating, it is sprayed with a patented "scrapy" which makes it easier for the coating to adhere to the pipe.

The pipe is moved through the extruder while "Timcoat" mix is applied at a constant 360F. As soon as the pipe leaves the extruder, it gets a spiral wrapping of cotton fabric.

A cooling shower follows quickly. Then the wrapped pipe is covered with lime coating whitewash.

The new plant is located for convenient transportation of the coated pipe to all parts of the Gulf offshore operating area.

The 10-acre plant was set up at Brown & Root's Belle Chasse pipe yard, on the Algiers Canal. The yard is on the west bank of the Mississippi, just south of New Orleans.

Contracting Up in '58

The pipeline contracting business was mighty good in 1958, according to the latest figures of R. P. Gregory, outgoing president of the Pipe Line Contractors Assn.

Gregory reports that 40 contractors did $236-million worth of business in 1958, and that in 1957, 44 contractors did only $205-million worth of pipeline building.

Gregory says that the pipeline contractors' 1958 business volume figure is "21% higher than their average over the three previous years."

In 1958, the contractors laid a total of 4,690 mi. of pipe less than 20-in. in diameter, and 6,010 mi. of pipe 20-in. and larger.

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The "Hi-Lo" attachment to the LimiTorque Valve Unit makes it ideal for the special requirements of water works, oil refineries, and sewage treatment plants, etc., where normal operating conditions require low or medium speed operation, but under emergency conditions fast speed operation is a must. Line surge or hammer is reduced under emergency hi-speed operation by changing to low speed operation prior to seating. Further information available from Philadelphia Gear Corporation.

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Pipeline Contractors Are Bullish

The 1959 outlook for pipeline contractors is "quite optimistic," according to John H. Williams, newly-elected president of the Pipe Line Contractors Assn.

That's how Williams, president of Williams Bros. Co. of Tulsa, summed up the prospects for pipeline building in the coming year in a talk with PETROLEUM WEEK shortly after his election last week.

Williams was elected at the pipeline contractors' 11th annual convention, at Miami Beach, Fla., where optimism was the byword.

Without offering a guess on the number of miles of new line to be laid this year, Williams nevertheless reflects the contractors' optimism: "There's quite a bit of pipeline mileage planned for 1959, and somebody has to build it. Somebody usually means one of our members."

The bright 1959 forecast is based primarily on the need for new natural-gas-transmission mileage.

Although crude- and product-line building is likely to be about average this year, natural-gas lines are expected to blossom considerably.

Williams says the recent reversal of the Memphis decision will stimulate gas-line building somewhat, because "it will make the gas companies more willing to make the tremendous investments necessary for gas-line expansion."

But the new PLCA president is quick to point out that "the Memphis decision isn't the whole story by any means. "Basically," he says, "1959 will be a good year in gas-line building because there are still a good many people who don't have natural gas and want it, and there is plenty of natural gas to be sold."

But Williams figures that the bulk of gas-line building this year will be to increase capacities and to expand existing systems, rather than to build many major new transmission systems.

"In this country," he says, "We've just about run out of large new markets that are unconnected to natural gas reserves. So most of the construction will be to supplement the service to areas already getting gas."

As a result, Williams feels, a good deal of the 1959 total of new pipeline mileage will be piled up en route from gas producing areas to "established centers of population—like those along the East Coast and West Coast, and Midwestern cities like Chicago."

Williams sees little help coming for the pipeline contractor in 1959 in the way of hot new pipeline equipment.

"Two or three of the automatic welding processes seem to have some promise," he says, "but I see no really significant advances in pipeline-building tools this year."

But he sees "a likely continuation" of the gradually-rising operating costs contractors have had to put up with.

Estimates are that contractors' labor costs rose about 5% in 1958 alone, and that equipment costs showed a corresponding increase.

Williams also says that the now-possible increase in steel prices would affect pipeline contractors "only indirectly," because the company that will operate the pipeline buys the pipe.

What's New / IN TRANSPORTATION

Pacific Gas & Electric Co. has completed its application for the approval of its 1,300-mi. Canada-to-California gas line by all regulatory bodies concerned.

PG&E has asked the California Public Utilities Commission for permission to build a 296-mi. leg of the system from the California-Oregon border to the San Francisco Bay area. This segment would cost $64-million.

Pacific Gas Transmission Co., a PG&E subsidiary, recently asked the Federal Power Commission for authorization to build the California-Oregon border through Oregon, Washington, and Idaho.

Applications for the Canadian segment of the 36-in. gas transmission system have been on file with both Alberta and Canadian federal agencies for quite some time.

Initial deliveries of the system would average about 415-million cu. ft. of gas daily.

•

Aurora Gasoline Co. is studying the feasibility of a short crude line from South Michigan fields to its Detroit refinery.

Aurora is primarily interested in tying in the Scipio field, in the Hillsdale area, but will consider serving other southern Michigan producers as well.

The company feels that a crude line would stimulate exploration in the area, already one of the most active in Michigan.

•

American Louisiana Gas Co. is beginning construction on its 100-mi. line through the Ouachita Mountains, in Arkansas.

The $6-million line will run from the Aetna gas field, Franklin County, Ark., to the Arkansas Louisiana system at Jones Mills, between Malvern and Hot Springs.

•

A new 4.5-million-gal. asphalt terminal has been opened at Savannah, Ga., by Savannah Terminal, Inc. The new terminal will receive, store, and blend Shell Oil Co. asphalt.

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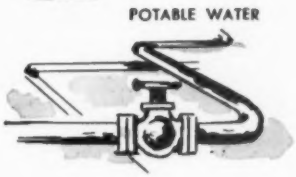

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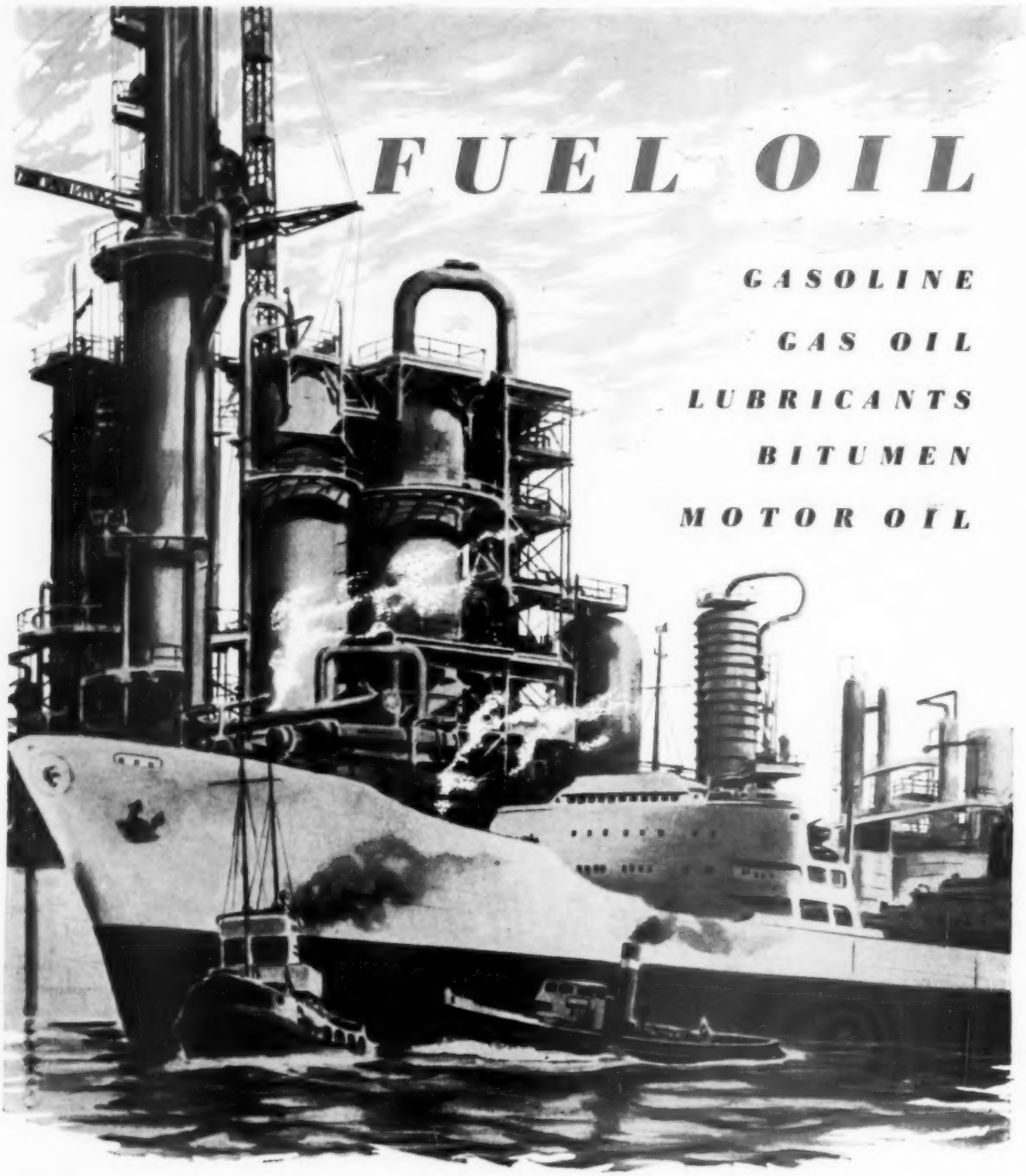
EXPORT: British Anchor Chemical Corp., New York

BW ® Marbon



FUEL OIL

GASOLINE

GAS OIL

LUBRICANTS

BITUMEN

MOTOR OIL

MABANAFT

Importers / Exporters

MARQUARD & BAHLS G.M.B.H., HAMBURG 1, TELEX: 0211670

MABANAFT

Argentine Pact Sets Oil Export Terms

What will be done with any excess Argentine crude developed by foreign companies if Argentina's target of self-sufficiency in oil is, in fact, achieved within the next few years?

One detailed and specific answer to a question that could remain theoretical for some time has now emerged. It's spelled out in the officially released text of the contract between Argentina's state-owned Yacimientos Petroliferos Fiscales and two Jersey Standard affiliates (PW—Dec.12'58, p9).

The contract, analysis shows, represents a big step back into the producing end of Argentina's oil business for Esso. In addition, it assures Esso the right to expand to retain a minimum 16.1% share of the growing Argentine domestic market for the 30-year term of the contract.

Under the Esso oil development contract, Esso has the right to export surplus production, though YPF retains title to the oil to seaboard.

Under a general governing clause, the government itself, rather than YPF, retains the right to authorize oil exports after national demand is wholly satisfied by Argentine production.

Specifically, Esso Argentina (a new, U.S.-incorporated firm) has the option to acquire for export any quantities of oil on which YPF is unable to take delivery.

The price for exportable oil is not specified in the contract; it will be determined by mutual agreement.

Esso is obligated to pay YPF the net balance remaining to it from such export sales, after deducting from the export price the total payment it is entitled to for its production and the costs of getting it to seaboard.

In general, the state oil company is bound by the contract to take regular and uninterrupted delivery of all oil produced at maximum efficient rates by Esso Argentina.

YPF does, however, have the right not to take delivery of quantities in excess of national needs, if it prorates this nonacceptance among all the companies producing in Argentina at the time.

In this event, Esso Argentina has two further alternatives:

(1) It can continue its normal producing rates so that YPF can sell the excess direct to Esso SAPA, the integrated Esso company in Argentina, at a price that will permit a "reasonable profit."

The maximum volume to be bought by the company will be in proportion to its relative position in the Argentine market in the period from May 1, 1957, to Apr. 30, 1958, when it held 16.1%. This clause assures that Esso SAPA's share of the market will not be frozen to the actual volume it marketed in that period under the recent "nationalization" decree passed in November.

(2) Alternatively, Esso Argentina may limit its production to volumes that YPF is able to take. But if such limitations aggregate more than six months' production, the 30-year contract will be extended proportionately.

The "total compensation" to Esso Argentina will include monthly peso payments for oil and gas produced and delivered, and also a sum equal to income and profits taxes payable on the total.

For oil deliveries, payments will be the peso equivalent of $11.50 per cubic meter (6.3 bbl.) for the first 2,000 cubic meters daily; $11.25 for the next 2,000; and $11.00 for volumes over 4,000 cubic meters daily.

The contract does not lay down specific terms for gas. It states that YPF and Esso Argentina will try to find commercial use for any gas deposits found, and will agree on conditions for its production and delivery.

YPF will pay a "reasonable sum" for each cubic meter of gas produced and delivered. If it is to be used for fuel, the payment will take into account the compensation Esso Argentina is to get for petroleum of equivalent calorific value. If it is to be used for other purposes, the payment will be based on its commercial value in the market.

The additional sums payable to Esso Argentina—beyond those for oil and gas deliveries—stem from the fact that the contract does not exempt the company from Argentine income and profit tax laws, although Esso is taking over obligations of YPF, which is tax-exempt.

Instead, the contract provides that YPF either pay Esso Argentina a sum equal to the total of all income and profits taxes payable on the company's total compensation, or else assume Esso's obligations to pay the taxes.

Unlike some of the other U.S. companies with Argentine development contracts, Esso Argentina will be free to remit in dollars all income that is not needed for its Argentine operations. Its compensation, entirely in pesos, will be convertible at the free exchange rate.

Other U.S. groups will be paid

Iraq Balks at Cairo's Oil Policy

CAIRO—The deep rivalry and suspicion between Baghdad and Cairo over oil and other economic policy again erupted—in the Arab League Economic Council meeting held here recently.

It's just like old times: Iraq is again the League's black sheep. And again it's fighting off the Cairo-dominated League's attempts to achieve unified control over Arab economic affairs.

The dominating Iraqi theme throughout the League meetings was an exhortation to go slow on Arab economic unity.

In times past, Hashemite Iraq had dodged attempts at Pan-Arab control by ignoring League resolutions.

Now, leftist revolutionary Iraq is fighting back with counter-proposals that would cripple some of the economic integration projects.

The Iraqi delaying tactics sent various oil transport proposals back to a technical committee for further study.

One was a proposal for an Arab tanker company.

Another was Saudi Arabia's Pan Arab pipeline company, a proposal revived by oil director Abdullah Tariki.

To counter the pipeline company, Iraq again proposed an oil-transit-guarantee agreement among the Arab states, within the framework of a general oil pact defining a unified Arab oil policy. This proposal is finding warm support in the Arab world's communist newspapers.

Iraq also refused to join the Arab Development Bank, protesting Cairo's controlling interest in it.

...he's a few hours from anywhere

Once this boy would have lived a secluded life, far from the outside world. Today the world comes to his door. He learns many things, such as how power-driven machines can help him to meet the needs of his people.

Throughout Asia, Africa and the lands of the Pacific, new industries call for more oil. And Standard-Vacuum is doing its best to meet the demand. Stanvac finds the oil, transports and refines it, then delivers the finished products—all within the area where Stanvac operates.

This is a big job and a worth-while one. Stanvac is proud and privileged to be able to do it well.

STANDARD-VACUUM OIL COMPANY POWERS PROGRESS

White Plains, New York

partly in dollars—but also partly in blocked pesos that cannot be converted or taken out of Argentina without special permission.

Prepayment of up to $23-million that Esso Argentina is committed to spend to build a crude pipeline for the state oil agency will be in addition to the so-called "total compensation."

The pipeline cost will be repaid entirely in dollars, with 5% annual interest, in 30 annual installments, starting when Esso Argentina completes the line and turns it over to YPF.

YPF may, however, elect to bear any peso costs at the time when a separate pipeline agreement is drawn up with detailed specifications. In that event, Esso would finance only the foreign exchange component.

Esso has now agreed to start construction as soon as possible on the 14-in. line, which will run 512 mi. from Neuquen to Bahia Blanca.

Two provisions of the 30-year contract will continue unaffected even if Esso Argentina elects to surrender its contract acreage within that period.

One is the company's pipeline financing commitment.

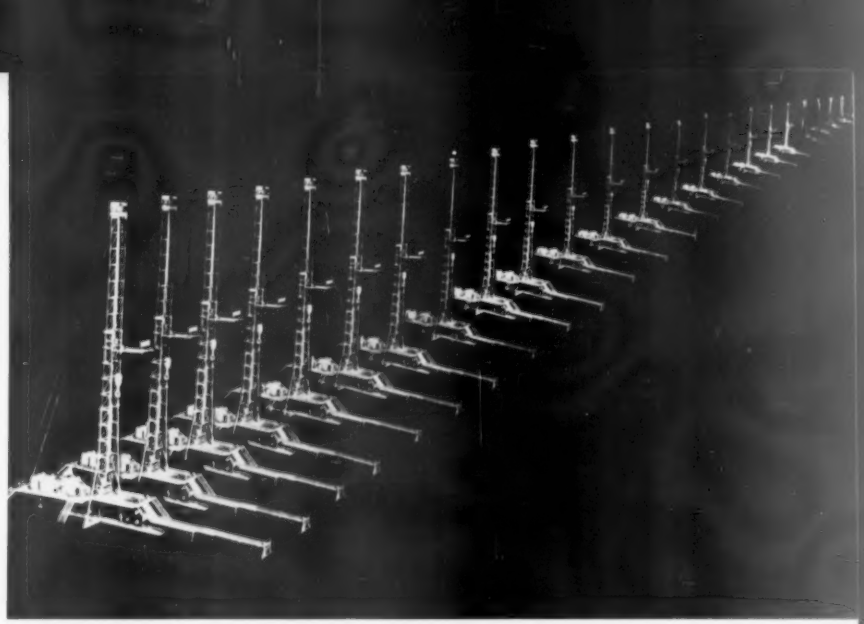
The other is the provision for normal continuation of the refining, transport, and marketing operations of Esso SAPA. This company is assured that it will be permitted to import crude from its normal suppliers under "reasonable competitive conditions" if YPF cannot sell it enough Argentine crude for pesos.

Esso Argentina itself is permitted several jump-off points at which it could surrender its contract acreage, paying YPF any unspent balances of its investment commitment for the periods involved.

Its minimum investment obligation for the full 30 years would total some $47-million. This includes $10-million in the first period (three years); $13-million in the second (three years); a possible $24-million in the third (four years); and an unspecified sum for the final period (20 years). Esso can withdraw after each of the first three periods, or any time in the last 20 years.

The company assumes full management responsibility, as well as all risks, for exclusive operations on the contract area. This covers 1,185,000 acres in Neuquen province. It will be reduced to 25% of that acreage by the beginning of the 11th year.

Esso SAPA also will retain its limited old producing concessions in Neuquen for the 30-year term of the new contract. Its old Salta fields, however, have been ceded to YPF without charge.



THIRTY identical rigs, Ideco H-40 Dual Ramblers manufactured for Argentina in the U.S. and Italy, would stretch half a mile. They'll speed drilling as . . .

Rigs Are Delivered to Argentina

Part of the biggest single order ever placed for identical drilling rigs —30 of them, worth $7½-million— was delivered last week to Argentina's state oil company, now getting the first of its Italian-built Ideco rigs (PW—Jan.16'59,p68).

Ten of the rigs, Ideco H-40 Dual-Ramblers, had previously been delivered to Yacimientos Petroliferos Fiscales. These were manufactured in the Beaumont (Tex.) plant of Ideco, one of the Dresser Industries.

The second part of the order, for the additional 20 now being delivered to the dollar-short Argentine oil agency, will be payable in Italian lire. They were manufactured in Italy by Nuovo Pignone under one of Dresser's five European licensing arrangements for manufacture of drilling equipment.

The 20 Italian-built rigs will be delivered to YPF over a six-month period, at the rate of three per month.

The effective performance of the ten U.S.-built rigs already in use is credited for the order for the additional 20 from Italy by Ideco officials.

The "Rambler" is a complete portable drilling outfit mounted on two trailers that serve as a rig floor.

The new-type rigs, which YPF has been using in the Comodoro Rivadavia field, have reportedly permitted YPF to reduce rig-up time and complete wells in 15 days instead of the usual 45.

The design features accounting for the reduced rig-up time include a telescoping Kwik-Lift mast requiring no external guy lines. Mounting of the mast and hoist on separate trailers permits quick coupling over the well-site.

Also speeding rig-up time are two unique devices built into the trailers. A gooseneck lifting system at the forward end of each trailer uses reeved sheaves on a hinged frame to elevate the trailer up to 18 in. for leveling purposes. The pipe ramp walk is also hinged at the substructure so that it can be dropped to a 4-ft. working height.

Each of the Dual-Rambler rigs includes an independent Ideco pump drive designed for fast hook-up and easy portability.

Also, 600-hp. duplex mud pumps and torque-converter-equipped diesel engines are unitized on skids with chain drives and oil-bath guards. The pumps are remotely air-controlled from the driller's console.

The standardization permitted by the concentration of 30 identical rigs provides another advantage, according to Dresser officials, both for crew training and for uniform maintenance.

Completion of the current order in the next six months will bring the total number of Ideco rigs operating in Argentina to 76, ranging from 200 to 2,000 hp.

Comeback in Egypt Due for Shell Group

CAIRO—The Royal Dutch Shell group is expected to make a comeback in Egypt in the next few weeks. It was abruptly dispossessed two years ago, after being associated with the Egyptian oil scene for nearly half a century. Its affiliates were among the

British interests sequestered and placed under state custody when Britain attacked the Suez Canal in late 1956. These include Anglo-Egyptian Oilfields, Ltd., which is controlled by Shell and British Petroleum Co., and Shell Co. of Egypt, a marketing firm.

The Shell group will regain its properties, resume drilling, production, and refining operations on its own account, and take over marketing of its own products, under an agreement already initialled with Egypt's Ministry of Economy.

This pact will become operative as soon as Britain and Egypt agree on a settlement to normalize their trade and financial relations.

The settlement was clearly in sight last week. Observers expect efforts in Cairo of World Bank president Eugene Black will succeed in getting the two nations over the remaining hurdles very soon.

The Shell group's pact with Cairo reportedly includes settlement of some pre-Suez problems.

For instance, Anglo-Egyptian has agreed to pay tax arrears as agreed to by the state custodian during sequestration. According to Egyptian sources, the Shell group had demanded annulment of that decision in previous negotiations.

Though terms of the pact have not been made public, it covers the following additional points, according to reliable information:

- AEO and Shell of Egypt will be fully de-sequestered, and their properties and assets—an estimated $110-million—restored to their owners. AEO will regain its 44,000 b/d Suez refinery, and Shell its marketing network, which is considered the largest in Egypt.
- AEO will get some new drilling permits, which will run to 1961. The areas are not specified, but apparently may include some of the 61 permits that were given to the new state-owned General Petroleum Co. AEO, together with Socony's Egyptian affiliate, had long-standing claims to these permits, which had not been finalized at the time the Shell interests were sequestered.
- For its own account, AEO will continue to develop its Ras Gharib and Hurghada fields in the Eastern Desert, and, for its joint account with Socony, three fields in Sinai.
- The Shell group will submit to a domestic-price-differential decree passed while AEO and Shell were sequestered. Shell negotiators had asked that the Shell group be exempted from this decree, on the ground that it would bring heavy financial losses.

What's New / AROUND THE WORLD

SICILY—Semi-autonomous Sicily's right to issue refining concessions on its own has been denied under a ruling by Italy's supreme court, even though Sicily has its own oil law. As a result, decrees issued last year authorizing construction of four new plants in Sicily have been annulled.

•

GUATEMALA—Royal Dutch Shell's first Guatemalan wildcat will be spudded in Peten in April by Kerr-McGee Oil Industries, with a rig capable of reaching 7,000 ft.

The site will be 30 mi. east of Flores.

•

INDONESIA—A new $40-million program to open up the 20-year-old Tandjung field for the first time will be started this year by Royal Dutch Shell in South Kalimantan.

Shell said last week it has already invested some $14-million in the field, where 32 wells have been drilled. The oil is 38.9-gravity and highly paraffinic.

The new plan includes laying a 20-in. pipeline 161 mi. to Shell's coastal refinery at Balikpapan. Another 30 wells will also be drilled at Tandjung, to bring producing potential to 40,000 b/d in 1962, when the line is scheduled to be completed.

•

PAPUA—An offset has been spudded to drill directionally into the same horizon as the recent Puri wildcat oil find.

The No. 1 Puri, now plugged, was the first strike in 20 years of joint exploration in the Australian territory by affiliates of Standard-Vacuum and British Petroleum. (PW—Nov.21'58, p36).

•

SYRIA—Egypt's General Petroleum Authority is considering formation of a mixed company with foreign capital to develop the Menhall-Atlantic oil discovery at Karatchok, northeast Syria, Radio Damascus said last week.

A Ministerial Committee from Cairo announced that GPA would itself start development of the oil area, which, it said, has proved reserves of 350-million bbl.

EIRE—Ambassador Oil Corp. is slated to drill Eire's first test well within two years under terms of its 20-year concession.

The concession, covering the whole 27,000 sq. mi. of the republic, excluding offshore acreage, was formally granted to the Ft. Worth independent last week. It calls for minimum investment of $500,000 in the first five years, with $2½-million to be spent in each of three additional five-year periods.

•

INDIA—The government has received a "satisfactory" offer of Soviet aid to build its projected 40,000 b/d refinery in Bihar, and has decided to negotiate the terms (PW—Dec.5'58,p60).

The plant is scheduled for completion in 1962 as the second of two state-owned refineries planned to handle crude from Assam. Rumania will help finance and build the first 15,000 b/d, by 1961.

•

FRANCE—French oil output hit a record 48,163 b/d in 1958, including 8,818 b/d in the French Sahara and 10,096 b/d in Gabon and the Middle Congo.

•

VENEZUELA—Oil output averaged 2,604,840 b/d in 1958, a 6% drop from the 2,779,245 b/d of 1957, according to official figures. December output was 2,848,476 b/d.

Company averages for the year, in b/d: Creole, 1,071,104; Shell, 703,697; Mene Grande, 388,941; Socony, 127,619; Richmond, 75,217; Sinclair, 61,533; Texaco, 50,900; Mercedes, 34,068; Atlantic, 27,941; Superior, 26,327; Sun, 12,103; Phillips, 11,613; San Jacinto, 8,681; Signal, 3,275; Talon, 1,583; Pan Venezuelan, 84; Continental, 65.

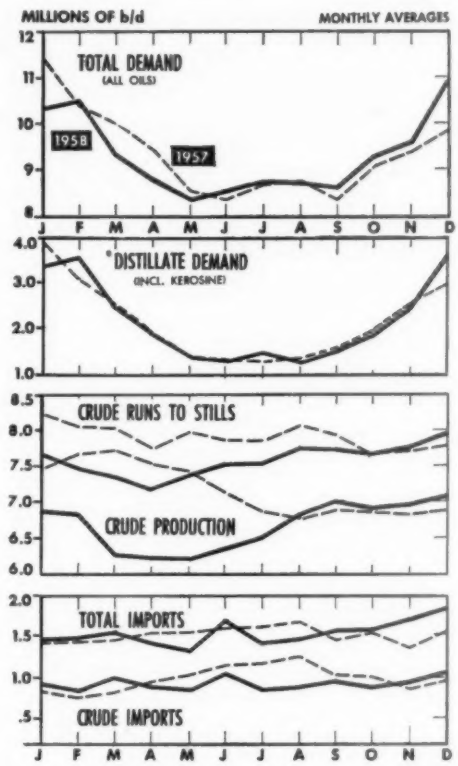
•

JORDAN—The fourth wildcat in Jordan will be spudded by Phillips Petroleum at Sweilah on an undrilled structure west of Amman.

The company last year took over the Pauley Petroleum concession. It encountered difficulties with No. 1 Halhol, the third wildcat on the concession, and has abandoned it at about 6,000 ft. in the Hebron district, close to Israel.

PETROLEUM WEEK'S

Fingertip Figures



TOTAL DEMAND
Latest 4-week average 11.126
Year ago 9.879

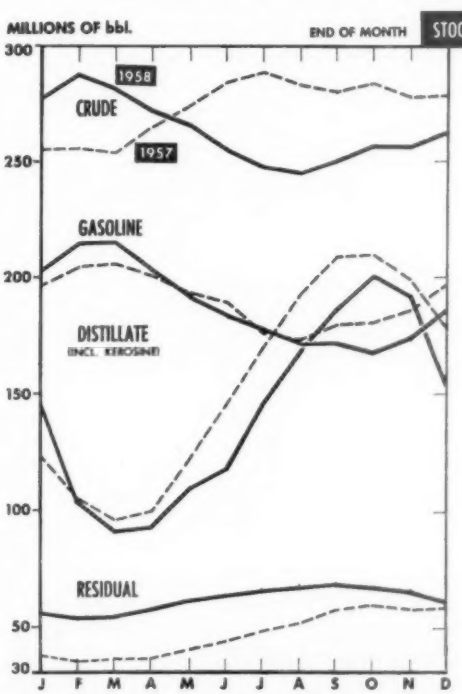
DISTILLATE DEMAND
Latest 4-week average 3.757
Year ago 2.994

RUNS TO STILLS
Latest week 8.129
Previous week 8.245
Year ago 7.675

CRUDE PRODUCTION
Latest week 7.087
Previous week 7.052
Year ago 6.925

TOTAL IMPORTS
Latest week 1.821
Previous week 1.857
Year ago 1.361

CRUDE IMPORTS
Latest week .869
Previous week .808
Year ago .713



CRUDE STOCKS
Week-ended 1-10 260.3
Previous week 262.9
Year ago 276.7

GASOLINE
Latest week 190.7
Previous week 190.0
Year ago 200.6

DISTILLATES
Latest week 132.9
Previous week 144.5
Year ago 160.7

RESIDUAL
Latest week 59.4
Previous week 60.0
Year ago 58.0

Total demand for petroleum—domestic and export—topped 12-million b/d last week for the first time.

The new record, based on API data for the week ended Jan. 16, was 300,000 b/d above the previous peak, reached in the second week of January, 1957, when exports to Europe were at a peak.

Indicated domestic demand for the week averaged 11,744,000 b/d—which by itself was higher than the January, 1957, total demand—including exports.

Total demand for all of the major products was at a high level for the week, with demand for distillates at a new peak of more than 4.2-million b/d.

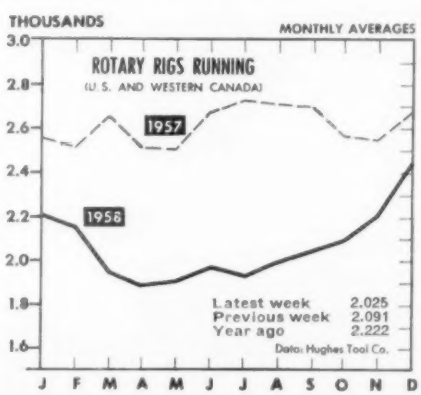
The big rise in demand for distillates (including kerosine) resulted in a net draft of 11.6-million bbl. on distillates stocks during the week, reducing the total inventory to 20-million bbl. under a year ago.

The one-week gasoline demand averaged slightly more than 4-million b/d, unusually high for a January week.

Refinery runs were down more than 100,000 b/d from the high rate of the previous two weeks, but refiners still show no inclination to shift away from high gasoline yields.

Last week's nationwide yield of gasoline on crude runs and blended natural gasoline was 50.0%, still not far from the peaks reached last August. The combined yield of distillate and kerosine, however, was up one point from the December rate, amounting to 31.6% last week.

Imports of products, which for the second consecutive week exceeded imports of crude, were down slightly from the record high reached in the first week of January. But imports of light finished and unfinished products continued to rise, averaging 165,000 b/d last week.



The Market Trend

For Distillates: A Pause or a New Rise?

"If we can just keep the virgin gas oil out of the cat cracker, everything will be fine." This was a marketer's comment this week pointing to the need for higher yields of distillates and lower output of gasoline.

Heating oil prices pushed up smartly in many areas of the nation last week. Gulf Coast No. 2 fuel was up 0.25¢ to a very firm 9.625¢. East Coast prices were up 0.5¢ a gal. at most points. For the first time this heating season, Chicago No. 2 fuel prices moved upward as if they meant it.

There was no more January No. 2 fuel left in the Gulf Coast cargo market. Very little was offered for February, either. And East Coast marketers continued to dip into California supplies for supplemental cargoes.

Increasingly, this question is voiced: Will distillate prices make a stand at this level, or will the upward push continue? A tendency toward a stand was seen when some East Coast buyers tried to put a ceiling (9.625¢) on spot purchases. On the other hand, some sellers asked 0.125¢ premium, and at least one seller found a ready buyer.

Another strong upward push on distillate prices could come from widespread refinery strikes or another bout of cold weather. No. 2 fuel already is strong enough to tie the product in with sales of surplus gasoline. Should strikes and cold weather hit simultaneously, No. 2 prices would be buoyant.

On the other hand, there are powerful—albeit intangible—deterrents to further price advances for distillates. Don't forget that there already have been three rounds of heating oil advances in the East. A fourth round would certainly try the forbearance of resellers and consumers. There's always natural gas competition, too.

And if heating oil prices surpass their 1957 Suez-crisis levels now, when crude prices are slipping back, some rather expert public relations work may be called for. Right now, Gulf Coast prices are within 0.625¢ of the Suez-crisis peak. For many consumers, tank wagon prices for No. 2 fuel are as high as they have ever been.

Some Big U.S. Tankers: Watch for some tricky deals with U.S.-flag tankers this summer. About six big vessels are coming down the ways for June delivery, and they don't have assignments as yet.

New Importer: A cargo of naphtha was scheduled last week for Caribbean to Los Angeles. And all signs indicate that one more West Coast refiner—this time an independent—has decided to use imported unfinished oils.

Price Hikes Overseas: In one day alone, price advances were registered in kerosine, No. 2 fuel, and gas oils at Aruba, Amuay, Caripito, Abadan, Ras Tanura, Bahrain, and Pulau Bukom. Advances in the U.S. led the way.

Black Rates Turn Easy: Foreign-flag black tanker rates are all set for a seasonal decline. Rates slipped last week from USMC —50% to —57% in the Caribbean. There are approximately 50 ships in that area that are seeking some employment before Feb. 15.

The Market Place AROUND THE WORLD

Prices compiled for PETROLEUM WEEK by Platt's OILGRAM Price Service and National Petroleum News, McGraw-Hill Publications

All prices as of January 16

Bold face type indicates changes from previous week

KEY PRICES—REFINED PRODUCTS

(¢ per gal. except dollars per bbl. where $ is shown)

Western Hemisphere

U. S. Gulf Coast, cargoes
- Gasoline, 98 oct prem 11.75-12.75
- Gasoline, 92 oct reg 10.5-11.5
- Kerosine 10.125-10.25
- **Heating oil, No. 2 ..... 9.875†**
- Gas oil, 48-52 d.i. 9.875
- Fuel oil, bunker "C" $2.00-2.10

Caribbean, cargoes
- Avgas, Grade 100/130 ..... .16
- Gasoline, 93 oct research prem 10.75
- Gasoline, 87 oct research reg 9.875
- Gasoline, 79 oct research 9.125
- Gasoline, 70-72 oct motor method 9
- **Kerosine ..... 10.375†**
- **Heating oil, No. 2 ..... 9.625†**
- **Gas oil, 48-52 d.i. ..... 9.875†**
- Fuel oil, bunker "C" $2.00

New York Harbor, barges
- **Kerosine ..... 11-11.5†**
- **Heating oil, No. 2 ..... 10.5-11†**
- Fuel oil, No. 6 ..... $2.37-2.45

Okla-Group 3, northern shpt., bulk
- Gasoline, 89 oct reg 11.5-12.375
- Kerosine 10.5-10.75
- **Heating oil, No. 2 ..... 9.5-9.75†**
- **Fuel oil, No. 6 ..... $1.80†**

Chicago, bulk
- Gasoline, 91 oct reg 11.5
- **Heating oil, No. 2 ..... 10.5†-11.85**
- **Fuel oil, No. 6 high sulfur ..... 7.65†-7.75†**

Los Angeles, rack
- Gasoline, 88 oct reg 12-12.6
- Diesel fuel, PS 200 ..... 10-11.25
- Light fuel, PS 300 ..... $2.80
- Heavy fuel, PS 400 ..... $2.15-2.35

Natural Gasoline, Grade 26-70
- FOB Group 3 ..... 4.5
- FOB Breckenridge, Tex. 4

LP-Gas
- Propane, Oklahoma (Group 3) 5.5

Pennsylvania Lubes
- Bright stock, 25 p.t. ..... .22
- 200 vis. neutral, 25 p.t. ..... .21

Mid-Continent Lubes, Tulsa basis
- Bright stock, solvent, 95 v.i. 23-24
- Neutral, solvent, 200-210 vis. 19.5-20.5

Gulf Coast Lubes
- Bright stock, solvent, 95 v.i. ..... .24
- Neutral, solvent, 200 vis. 20.5

Eastern Hemisphere

Singapore (Pulau Bukom), cargoes
- Avgas, grade 100/130 ..... 17.25
- **Gasoline, 79 oct research ..... 10↓**
- **Kerosine ..... 10.75†**
- **Gas oil, 48 d. i. minimum ..... 10.5†**

KEY PRICES—CRUDE OIL

(2¢ differential per deg. of grav. applies except as noted)

Western Hemisphere

United States (at the well)
- Mid-Continent, 36.0-36.9 ..... $2.77-3.07
- North Dakota, 36.0-36.9 ..... 2.62-2.87
- Texas:
  - Gulf Coast, low cold test, 26.0-26.9 ..... 3.50
  - Gulf Coast, Upper & Lower, 26.0-26.9 ..... 2.92-3.22
  - West Texas, sweet, 36.0-36.9 ..... 3.00-3.07
  - West Texas, N. M., inter., 36.0-36.9 ..... 2.93-3.00
  - West Texas, N. M., sour, 32.0-32.9 ..... 2.71-2.86
  - East Texas, flat 3.25
  - Mirando, 28.0-28.9 ..... 3.31
- Illinois Basin, flat 3.00
- Pennsylvania Grade, Bradford dist., flat 4.05
- California, Signal Hill, 21.0-21.9 ..... 2.50†
- North Louisiana-Arkansas, 36.0-36.9 ..... 2.77-3.02
- Wyoming, sweet, 36.0-36.9 ..... 2.90-3.00
- Wyoming, sour, 32.0-32.9 ..... 2.71

Canada (flat prices, at the well)
- Acheson-Stony Plain (Alta.) $2.61
- Leduc-Woodbend (Alta.) 2.67
- Redwater (Alta.) 2.56
- Daly (Man.) 2.39
- Smiley (Sask.) 2.33

Venezuela (Cargoes, FOB lifting port designated)
- Cumarebo, 48.0-48.9, Tucupido $3.66
- San Joaquin, 41.0-41.9, Puerto la Cruz 3.25
- Oficina, 35.0-35.9, Puerto la Cruz 3.05
- Tia Juana, Medium, 26.0-26.9, Amuay 2.55
- Bachaquero, flat, Las Piedras 1.78-1.93
- Tarra, 38.0-38.9, San Lorenzo 3.08
- Lagunillas Heavy, flat, Cardon 2.10

†*Differential per deg. of grav. varies.*

Eastern Hemisphere

Middle East, Persian Gulf (Cargoes, FOB lifting port)
- Arabia, 34.0-34.9, Ras Tanura $2.08
- Safaniya, 27.0-27.9, Ras Tanura 1.65
- Iran, 34.0-34.9, Bandar Mashur 2.04
- Iran, 34.0-34.9, Abadan 1.99
- Iraq, 35.0-35.9, Fao 1.98
- Kuwait, 31.0-31.9, Mina-al-Ahmadi 1.85
- Qatar, 41.0-41.9, Umm Said 2.23
- Neutral Zone, Burgham, 23.5-24.4, Mina Saud 1.61
- N. Zone, Eocene-Ratawi, 20.5-21.4, Mina Saud 1.43

Middle East, Eastern Mediterranean
- Arabian, 36.0-36.9, Sidon $2.49
- Iraqi, 36.0-36.9, Tripoli, Banias 2.49

Far East, Cargoes, FOB Lutong, Sarawak
- Seria Light, 37-38 ..... $2.75

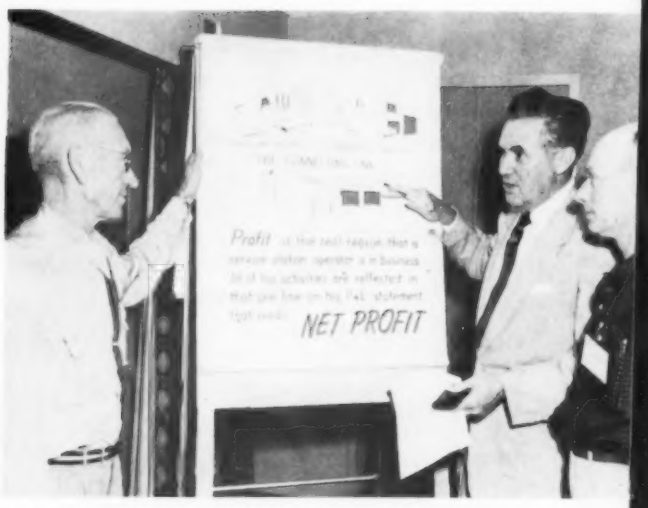
KEY TANKER RATES

(Last paid, per long ton, single voyage)

- U.S. Gulf-New York, clean ..... (USMC +15%) $3.28
- **U.S. Gulf-New York, dirty ..... (USMC +20%) $3.42↑**
- **NWI-USNH, dirty ..... (USMC —55%) $1.24↓**
- NWI-UK/Cont., dirty ..... (Scale —42½%) 18/8*
- **Per. Gulf-UK/Cont., dirty ..... (Scale —52½%) 29/4*↑**
- Persian Gulf-USNH, dirty ..... (USMC —70%) $3.81

**Sterling.*

D-X SUNRAY'S DIAMOND-SHAPED SIGN with lighted interior is put up at a former Tidewater station at Indianapolis.



AT FREQUENT MEETINGS, dealers and distributors are shown the value of D-X Sunray's merchandising program.

What Strategy Keeps

D-X Sunray Oil Co. finished 1957 with a motor fuel sales increase of 6.5% over the previous year; and in the first nine months of 1958 the increase was 9.8% over 1957.

Comparable figures for the domestic marketing industry were 2.9% in 1957, and 1.7% in 1958.

A principal reason is that, in mid-1956, D-X Sunray began a merchandising campaign linked to a new premium motor fuel.

The new premium fuel, DX-Boron, was introduced to dealers, distributors, and sales force at a series of 23 meetings held throughout the company's marketing area. D-X Sunray executives, including the president, attended the sessions.

Advertising officials directed the content of both media and point-of-sales advertising at two principal marketing problems: to counteract consumer belief that there is no difference in gasolines; and to stimulate declining demand. The advertising department says the sales figures speak for the success of the program.

Company officials also say, "The tie-in with boron used in jets, missiles, and rockets has been timely and profitable."

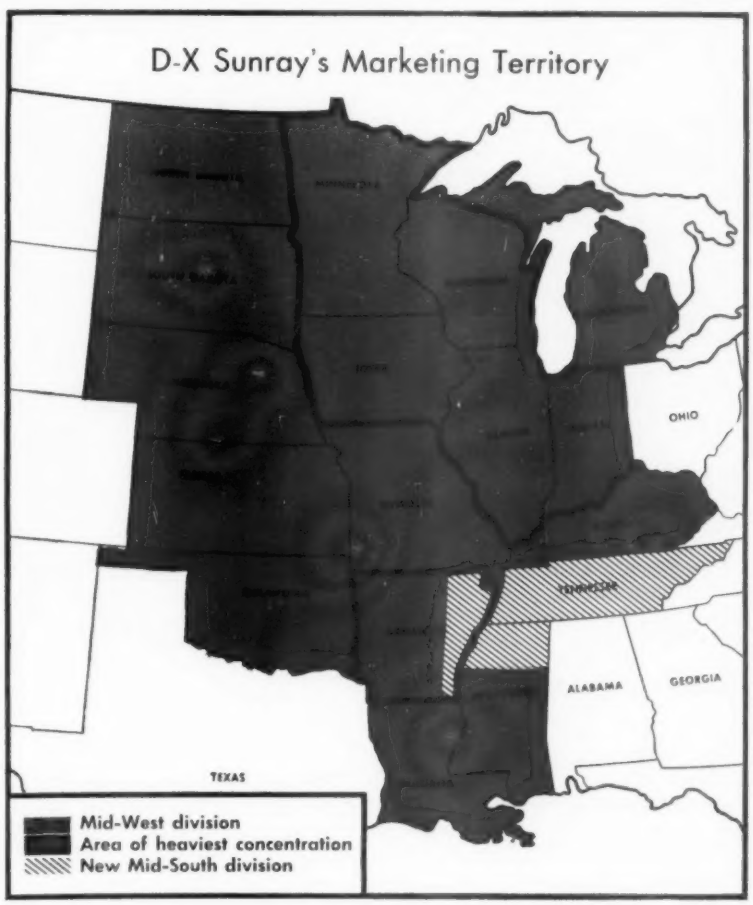
Another reason for the sales increase is that D-X Sunray has expanded its marketing territory by merger, by purchase of jobberships, and by building new service stations.

In December of last year, the company acquired its largest package of marketing facilities from Tidewater Oil Co.'s central division (PW—Dec.12'58,p11). These properties included 500 units in Oklahoma, Kansas, Missouri, Arkansas, Indiana, Iowa, Wisconsin, Minnesota, and North and South Dakota. In addition, four jobbers sold their properties to D-X Sunray in 1958.

So far, 159 additional stations are planned for 1959. Presumably many of them will be located in the newly formed Mid-South division (map), which will get special attention from the company this year.

POINT OF SALE ADVERTISING for D-X Sunray's premium fuel, DX-Boron, gets big play at pump islands in service stations throughout company's marketing area.

DX-Sunray's Sales Climbing?



What's New
IN MARKETING

The petroleum industry is openly protesting "using the promise of better highways as bait for extracting more taxes from highway users, and then using the money for something else entirely."

The federal government is proposing a 1½¢-per-gal. increase over the present 3¢-per-gal. tax, and 25 states propose increases of from 1¢ to 2¢ (PW—Jan.16'59,p59). If all proposed increases become effective, up to 44% of the retail price of gasoline will consist of taxes.

Some states do earmark their gasoline taxes for highway use only. Sometimes, however, the earmarking is not effective.

New York State, which diverts most of its gasoline-tax revenues to nonhighway uses, is proposing a 2¢ increase to its present 4¢ tax.

J. G. Jimenez, vice-president and general manager of Tidewater Oil Co.'s eastern division, protested the tax increase to Gov. Rockefeller in a telegram last week. He said that only constitutional earmarking of gasoline funds would assure that the revenues would go for highway uses.

Robert H. Scholl, vice-president and a director of Esso Standard Oil Co., thinks it's time for New York to face realistically the necessity of using automotive tax revenues only for highway use.

He also says that no gasoline tax increases would be necessary for highways today if the federal and state governments spent on highways the highway-tax revenues already collected.

•

Gasoline prices in Southern California were readjusted upward by 2¢ to 5¢ last week, wiping out a drop in retail prices that started late last summer.

Generally, major companies raised the price on regular grade gasoline from 25.9¢ to 27.9¢, and on premium gasoline from 30.9¢ to 32.9¢.

Independents' increases were larger, averaging about 3.5¢ on all grades.

•

Phillips Petroleum Co. held a wholesale and retail distributor meeting last week over closed circuit television, as a part of a half-day sales program in its 35 state marketing area last week. The meeting reached distributors in 37 cities, from Spokane, Wash., to Miami, Fla.

Here's The New Socony Line up

Socony Mobil Oil Co. has announced new titles and responsibilities for many of its top personnel under its new corporate set-up (PW—Jan.16'59,p13). The changes will be effective Mar. 1.

The realignment creates two operating divisions, one responsible for domestic operations, the other for operations overseas. In addition, the over-all corporate management is also realigned, to "function on the basic philosophy of centralized policy-making and decentralized administration."

Mobil Oil Co. is the division that will be responsible for operations in the United States and Canada, and for coordination with General Petroleum Corp., Magnolia Petroleum Co., Mobil Producing Co., and Mobil Oil Co. of Canada, Ltd. Its president will be **Herbert Willets,** a Socony director.

Three vice-presidents of the new division, and their areas of responsibility, are: **Vernon A. Bellman,** marketing; **R. Rea Jackson,** manufacturing; and **Fred H. Moore,** exploration and production. **Henry C. Moses** is general counsel, and **E. R. Alden** is manager of the claims department, under the general counsel.

Four managers, and their areas of responsibility, are: **P. W. Judah,** petroleum chemicals and paint; **Fred B. Korsmeyer,** employee relations; **A. G. Anderson,** traffic; and **Louis Haacke,** distribution.

Mobil International Oil Co. is the division responsible for operations outside the United States and Canada. President will be **Herman J. Schmidt,** also a Socony director.

Three executive vice-presidents and their responsibilities are: **Robert Siegel,** Middle East; **George S. Dunham,** Far East; and **Frank S. Cooper, Jr.,**

H. Willets

H. J. Schmidt

operations. **J. H. B. Wellacott** is vice-president of finance, and **Andrew C. Ingraham** is vice-president of supply and distribution.

Other executives of the new division are: **W. Lawrence King,** general counsel; **David M. Crawford,** intergovernmental affairs; and **Francis E. Powell,** assistant to the president.

Rawleigh Warner, Jr., vice-president, will work under Siegel in the Middle East operation, and **G. H. G. Caulton** will be a regional executive under Warner.

Arnold Stebinger vice-president, will work under Dunham, who will also be responsible for liaison with Standard-Vacuum Oil Co., in which Socony is 50% owner.

Four operating vice-presidents and two staff vice-presidents will function under Cooper. **E. C. Cram** is operating vice-president for Africa and southwestern Europe. Regional executives under him are **K. H. Field** and **A. G. Reed. Earl A. Brown, Jr.,** is vice-president for the Caribbean and Latin America; **Howard Bird, Jr.,** and **A. D. Graves** are regional directors under him. **Arthur L. Lanckton** is vice-president for northern and southeastern Europe, and **E. A. Dingee** and **Curtis M. Klaerner** are the regional executives. The fourth operating vice-president is **Laurence B. Davis,** who will be in charge of international sales. Executives responsible to him are: **H. Fisk Tarbox,** general manager of aviation sales; **Richard G. Coffin,** general manager of marine sales, **E. A. Hohmeyer,** general manager of bunker sales; and **R. M. Urquhart,** general manager of wholesale sales.

H. R. Moorman is staff vice-president of exploration and producing, and **John C. Dean** is staff vice-president for field services. **Charles P. Baker,** manufacturing manager, and **B. C. Fowler,** marketing manager, will report to Dean.

Harry D. Gasarch, comptroller, and **F. L. White,** treasurer, will be responsible to Wellacott, financial vice-president. **Edward Albat,** distribution planning manager, and **R. B. Ogden,** traffic manager, will be responsible to Ingraham, supply and distribution vice-president.

Socony's new over-all corporate organization is divided into five staff groups. Albert L. Nickerson continues as president and chief executive officer.

The administrative group will be under the direction of **Fred W. Bartlett,** chairman of the board and vice-chairman of the executive committee. **John F. Seal** is senior vice-president of finance, and **John J. Scott** is general counsel. **Paul Wollstadt** is manager of public relations, and **Arthur M. Sherwood** corporate secretary.

Arthur V. Danner, senior vice-president, is in charge of the research and engineering group. **Dallas R. Lamont** is vice-president in charge of research. **Thomas Simpson** is manager of engineering and operations analysis.

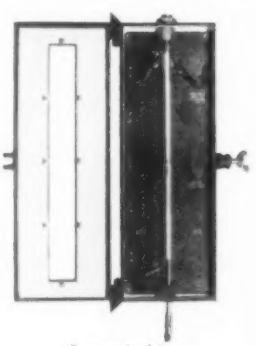
Paul V. Keyser, Jr., is senior vice-president in charge of planning. **Thomas W. Phelps** is manager of economics, and **W. P. Tavoulareas** man-

A NEW AND BETTER LIQUID LEVEL CONTROLLER

For controlling high and low levels in a variety of tank operations. *Especially ideal for surge tanks on lease automatic custody transfer units.* Easy to install . . . fully automatic . . . maintenance-free!

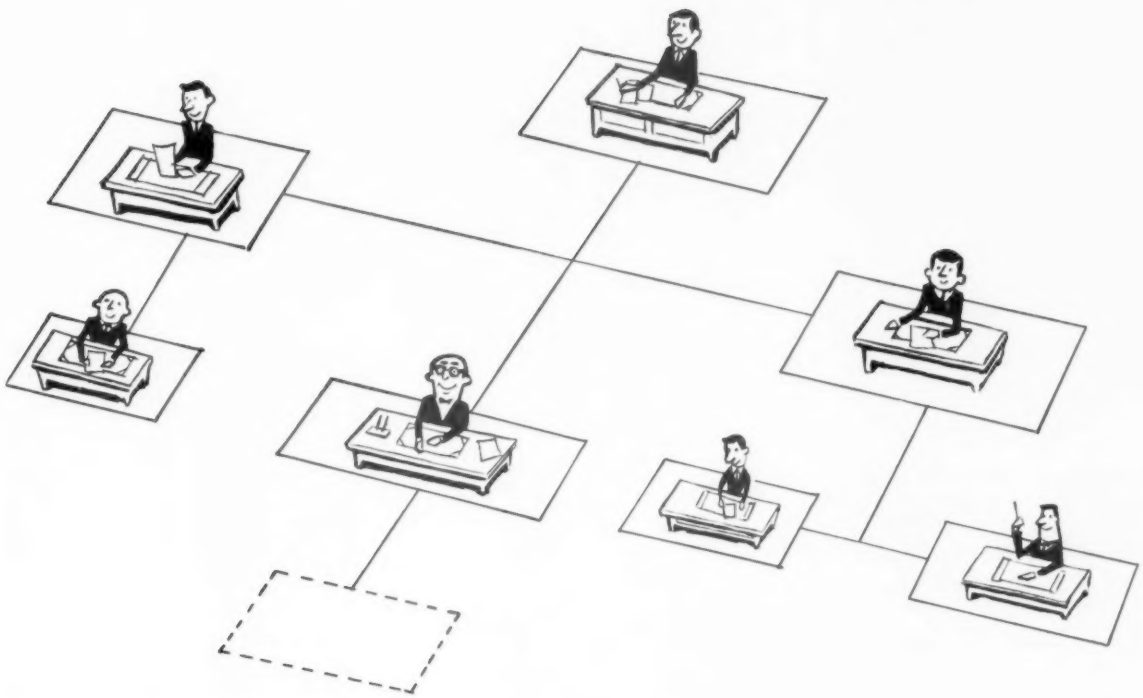
PHIL-MAG

WRITE FOR DESCRIPTIVE LITERATURE



Economical to Buy and Operate

Enardo Manufacturing Company BOX 1647 TULSA



"Will I have to go outside to fill Johnson's spot?"

They said he was too good to last. "Somebody's going to grab that Johnson. He's hot!"

And sure enough they did. And now, because you prefer to promote "from within", you're going crazy looking for Johnson's replacement. But where is he?

To promote from within
– train from within

Management men aren't born. They're made. Made by whom? By successful management men like yourself. And, the most startling paradox of all . . . the better the job you do of building your company's business, the more rigorous the pressure on you to keep a never-ending stream of management talent coming along to take over your ever-growing responsibilities.

Today management training is your single biggest task. Happily, it's one you share with many other business leaders. And their experience is yours to profit by – particularly the progress they have accomplished with "Engineered Business Reading."

Adult education
via participation

Most men after college find it difficult to continue their studies. They're willing, but working – interested, but involved with home, family, community affairs. Their minds are more mature – the "lecture approach" tends to fall on deaf ears . . . the "academic" is anemic; they want participation with realities.

That's why "Engineered Business Reading" is so compatible a way for them to learn and grow. Once their job interests are matched with the McGraw-Hill Specialized Publications meant for them, they are delighted to discover that the regular investment of a modest number of hours spent reading, at a time and place of their own choosing, not only helps them do their present tasks more productively, but points the way to the bigger and better things ahead. This is why so many "Management Development Programs" today in big companies and small are built around "Engineered Business Reading". At Stone & Webster, for instance, some 558 key men are currently engaged in a "self-educational" program of reading McGraw-Hill Specialized Publications.

An "Evaluation Study"
– at no cost to you

Call in a McGraw-Hill Reading Engineer and find out how to put such a program to work today in *your* company. Working with your organization structure and an analysis of your particular needs, he can show you how to match men and magazines with precision and long term profit. Use the coupon for your copy of the new helpful handbook, *"To Make a Manager, Start with the Man"*.

For better management . . .

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New York 36, N. Y.

☐ Please send me my personal copy of booklet, "To Make a Manager, Start with the Man".

☐ I would like a McGraw-Hill Reading Engineer to call on me on (date) _____

at _____ o'clock to demonstrate how "Engineered Business Reading" can work in my organization.

NAME _____ TITLE _____

COMPANY _____

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_____

ager of planning and analysis, both under Keyser.

Fred H. Wilcox, senior vice-president, is responsible for the exploration and producing group. **Verner Jones** is manager of exploration, and **E. V. Watts** is manager of producing. **Henry L. Waszkowski, Jr.,** is general assistant to Wilcox, and **T. W. Nelson** is technical advisor.

Clark S. Teitsworth is senior vice-president in charge of the supply and transportation group. **E. W. Beck** manager of purchasing, and **Parker S. Wise,** manager of marine transportation, report to Teitsworth.

•

JOHN R. ROCK has been named employee relations manager of Tidewater Oil Co.'s western division, in Los Angeles. He succeeds **Gardiner Blackman,** who recently advanced to the post of employee relations manager in the home office, in Los Angeles. With Tidewater since 1945, Rock has held several positions at the Avon (Calif.) refinery, at the western division general office, and at the home office. **Robert L. McKinnon** has been named assistant division employee relations manager. He has been in the San Francisco general office for the past two years.

VICTOR H. KING has been elected director of exploration for General Petroleum Corp., Los Angeles. King succeeds Carroll M. Wagner, who has retired. King has been manager of exploration since 1954.

V. H. King

W. D. Nelson

W. D. NELSON is the new general manager of the New York sales division for Gulf Oil Corp., and **J. B. Kelley** succeeds him as general manager of the Philadelphia sales division. Nelson succeeds **E. W. Emerson,** who is retiring. **B. R. Lawlor,** formerly manager of supply and operations in the New York sales division, succeeds Kelley as manager of retail and jobber sales in the Philadelphia division. **H. A. Goddard,** division manager of direct sales in Boston, transfers to Philadelphia. He succeeds **F. J. Hamilton** who will be a consultant to the Philadelphia division until his retirement. **F. A. Millard,** formerly administrative assistant in the Boston sales division, succeeds Goddard.

JAMES M. BIRD, formerly president of Birdwell, Inc., a well logging company recently purchased by Seismograph Service Corp., is vice-president in charge of SSC's well logging division, which will function as the Birdwell division of SSC, and will continue to operate in the eastern, southwestern and Mid-Continent areas. Bird, **Stanley M. Flynn,** vice-president of field operations, and **Robert D. Clarke,** formerly assistant to the Birdwell president, move from Bradford, Pa., to SSC's headquarters in Tulsa

M. L. Bottomley

J. M. Bird

MARVIN L. BOTTOMLEY has been promoted to chief estimator of The Refinery Engineering Co., Tulsa. He succeeds **Don Crawford,** who has resigned. **Charles B. Malone** succeeds Bottomley as assistant chief estimator. Malone has been an estimator for Treco since 1956.

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Jackson 3-6951

Boston 6 — Donald R. Thompson
350 Park Square Bldg.
Hubbard 2-7160

Chicago 11 — Edward A. Callahan Jr.
520 North Michigan Avenue
Mohawk 4-5800

Cleveland 15 — J. E. MacArthur
1164 Illuminating Bldg.
55 Public Square
Superior 1-7000

Denver 2 — J. W. Patten
Mile High Center, 1740 Broadway
Alpine 5-2981

Houston 25 — D. O. Hanson
724 Prudential Bldg.
Jackson 6-1281

Los Angeles 17 — Peter S. Carberry
1125 W. Sixth St.
Huntley 2-5450

New York 36 — Donald R. Thompson
500 Fifth Ave.
Oxford 5-5959

Philadelphia 3 — W. A. Potter
6 Penn Center Plaza
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909 Enterprise Bldg.
522 South Boston
Gibson 7-5594

England, London E. C. 4 — E. E. Schirmer
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95 Farrington St.

Equipment Companies

HARRY L. FALCK is the new manager of petroleum and chemical sales for the Los Angeles district of Allis-Chalmers Industries Group. He has been a sales representative in Los Angeles since 1953. **William G. Honsaker** has been assigned to the Los Angeles district as a sales representative. He recently completed the Allis-Chalmers training course for graduate engineers.

L. M. (Pete) OAKS is special representative for fishing tool and wire line services offered by the Canadian division of McCullough Tool Co., with offices in Calgary. Oaks, with McCullough for 15 years, was most recently district sales and service manager for Saskatchewan and Manitoba.

L. M. Oaks

S. R. Hawkins

S. R. HAWKINS has been appointed technical service manager in Europe, Africa, and the Middle East for oilfield products manufactured by Ideco, Inc., one of the Dresser Industries. Hawkins will continue to make his headquarters in Florence, Italy, where he has been located for the past three years. He has been associated with Ideco since 1950.

EARL R. NARUM has been named manager of automotive sales, and **ROY E. GOODWILL, JR.**, manager of general industrial sales, at the Detroit district of the Allis-Chalmers Mfg. Co. At the same time, **Kenneth Womelsdorf** was named sales representative at the Detroit district. Narum was an application engineer in the company's substation section for two years, before transferring to the Detroit district in 1951 as sales representative. Goodwill, with Allis-Chalmers since 1954, has been a sales representative in Detroit since 1956. Womelsdorf has recently completed Allis-Chalmers training course for graduate engineers.

REX L. NICHOLSON, president of the Liquid Carbonic Division of General Dynamics Corp., has announced the acquisition of Industrial Air Products of the South by that division. The acquisition includes two plants, in New Orleans and in Pascagoula, Miss., and warehouses in New Orleans, Baton Rouge, Houma, and Morgan City, La. Air Products of the South will be under the management of Liquid Carbonic's southern region, with headquarters in Atlanta, Ga. **Ralph Brown** has been named sales manager of the New Orleans operation.

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DISPLAYED RATE

The advertising rate is $16.75 per inch for Equipment and Business Opportunity advertising appearing on other than a contract business.

EMPLOYMENT OPPORTUNITIES

The rate is $22.20 per inch. Subject to Agency Commission.

UNDISPLAYED RATE

$1.80 a line. Minimum 3 lines. Box numbers count one additional line.

POSITION WANTED. Undisplayed rate is one half of above rate, payable in advance.
DISCOUNT of 10% if full payment is made in advance of four consecutive insertions of undisplayed ads.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches—to a page.

Send NEW ADS or Inquiries to Classified Advertising Division, PETROLEUM WEEK, P. O. Box 12, New York 36. Issue closes 10 days prior issue date.

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FOR RENT AT
Waterfront
BULK STORAGE AT PORT OF PHILA.
Chemicals, Solvents, Oils, etc.

5—600,000 gallons 4—300,000 gallons

AVAILABLE IMMEDIATELY
will rent these tanks individually.
Inquiries Invited

PIONEER OIL COMPANY
61st and Passyunk Philadelphia 42, Pa.
SARATOGA 7-2100

Foreign Drilling

8,000 — 10,000 ft.

$475,000 buys five complete rotary rigs, A-1 condition, Cardwell Drawworks, all alike, three now drilling. All in U.S.A., immediate delivery.

Cardwell Investment Company, Inc.
604 Petroleum Building; Phone AM 5-2611; Wichita, Kansas.

POSITION WANTED

Mechanical Engineer Experienced Latin America. Labor training, shop supervision or management. Equipment and plant maintenance. Also experienced tug and barge building and maintenance. Fluent Spanish, fair Portuguese. Willing relocate anywhere. PW-9779, Petroleum Week.

AUCTION

320 acres mineral with three gas wells Marion County, Alabama, to be sold public auction highest bidder for cash, at courthouse Hamilton, Alabama, on the 17th day of February, 1959. Register of Circuit Court in Equity.

WANTED

Anything within reason that is wanted in the field served by Petroleum Week can be quickly located through bringing it to the attention of thousands of men whose interest is assured because this is the business paper they read.

PROFESSIONAL SERVICES

RODGERS, SEGLUND AND SHAW ASSOCIATES
OIL AND GAS CONSULTANTS
Geology—Engineering—Geophysics—Economics
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Brochure Upon Request

PETROLEUM SPECIALIST

The growing Chemical Division of a long established major corporation is in need of an individual 25 to 30 with a B.S. in Chemical Engineering or Chemistry. This individual should have a knowledge of refining processes along with a related technical service background. Some general marketing experience would be desirable since this position entails approximately 30% travel in order to survey proposed markets after planning technical promotions. This assignment will present a challenge and an excellent opportunity to the right man. Prompt interviews will be arranged with qualified applicants.

Armour Chemical Division
Personnel Department
1355 West 31st Street
Chicago 9, Illinois

WANTED
DRILLING SUPERINTENDENT-PETROLEUM ENGINEER

Experienced Drilling Superintendent, who is also fully qualified as a Petroleum Engineer, to supervise one-rig operation in Turkey. Top salary and bonus. Send complete history and references. Replies confidential.

P-9567, PETROLEUM WEEK
68 Post St., San Francisco 4, Calif.

ALASKA 5 YEAR OIL LEASES

From U.S. government direct to you. We file your application for you. 2560 acres in each lease. Free information. John L. Donahue, 430—16th Street, Denver 2, Colorado. Phone ALpine 5-1087.

Too Many Meetings for Oil Men?

THERE HAS BEEN CONSIDERABLE FEELING in the oil industry recently that there are too many industry meetings. Some managements have been cutting down on participation—partly from a feeling that gatherings of "wealthy" oil men create a bad impression in the public mind, and partly from the discovery that sending fewer men to meetings can be a good way to trim expenses.

But there is another side to the matter.

One value of industry meetings is that by bringing men together to talk about common problems, they tend to restore oil's shrinking human element. As the petroleum industry rounds out its first century, less and less oil news is being made by the individual; more and more, the "company" is taking over.

Face-to-face meetings of groups from different parts of the country, and from different types of operations, help promote a balance.

At least as important is the value of meetings in bringing into a company a great amount of valuable information on a wide range of subjects. Still only partly appreciated is the great and increasing speed of the industry's technological advance. Problems can get out of hand sooner than in the past. Competitors can pull ahead faster, leaving a company no time to make up lost ground. The competition for information is becoming so intense that it can prove fatal for a company to fall out of touch.

ILLUSTRATING THE MULTIPLE ADVANTAGES of industry meetings are the two that will headline oil's centennial observances this spring —the Petroleum Exposition in Tulsa and the Petroleum Congress in New York (page 44). The opportunities for mass exchange of ideas (at a very low "unit cost") are staggering. More than 30,000 different oil men will be in Tulsa, where the entire, integrated oil industry will be physically displayed and represented by men from every segment. Some 5,000 oil men will be in New York, where the sweep of oil technology throughout the world will be reviewed.

On a smaller scale, various regular meetings on the industry's calendar bring the same kinds of benefits.

IF ANY OF THE INDUSTRY'S MEETINGS have grown unwieldy or repetitive, the solution isn't to throw them out. The solution is to revise agendas, to bring in new subjects, to cut away trimmings, to poll oil men on new approaches, and to modernize the meetings to bring them in step with the industry's advances.

The industry may have too many meetings—but it doesn't have enough of the right kind.

THE NEXT TIME YOU CEMENT, REMEMBER...

BJ MEANS A BETTER JOB

with

BJ RED TOP SCRATCHERS

The BJ Red Top Scratcher is scientifically designed to give you better scratching without damage to the mud cake on the way down—and to maintain its effectiveness throughout the operation. Each of the exclusive double-spring, coil-flex fingers has a cluster of 10 straight wires—to spread the scratching area—encased in a tight coil spring which gives it a positive bounce-back. The Byron Jackson Red Top Scratcher features a clamp-on design that lets you put it on in a hurry. It comes in standard sizes to fit all API casing OD's.

with

BJ RED TOP CENTRALIZERS

The BJ Red Top Centralizer is the result of close collaboration between Byron Jackson and the Spring Division and the Research Center of Borg-Warner. Its unique pre-stressed springs stay in place by their own force, with no welds to fail and no rivets to pop. Pre-stressing also assures you more resiliency and greater centering power within a slim overall design. Comes in all standard sizes. Clamp-on design.
BJ Centralizers and Scratchers are sold through all recognized supply stores—or see your Byron Jackson field service man or the cementing experts of BJ Service, Inc.

Byron Jackson Tools, Inc.
A Borg-Warner Subsidiary
P. O. Box 2017A, Terminal Annex
Los Angeles 54, California

WATCH BJ FOR THE NEWEST

Equipped to drill a depth of 24,000 feet with all crown block sheaves on TIMKEN® bearings

THIS rig in Oklahoma is equipped to drill a depth of 24,000 ft.! The mast is a Lee C. Moore 142′ Cantilever, with a gross capacity of 1,025,000 lbs. And for all crown block sheaves, Lee C. Moore used Timken® tapered roller bearings to keep sheaves properly aligned and turning easily, reduce maintenance.

The tapered construction of Timken bearings lets them take the heavy radial and thrust loads of deep drilling. And the full-line contact between rollers and races gives Timken bearings *extra* load-carrying capacity. Sheaves *stay* aligned and turn easier under constant, heavy loads. Drilling goes steadier.

Timken bearing rollers and races are case-carburized to produce hard, wear-resistant surfaces over tough, shock-resistant cores. They last longer, help parts work better, reduce maintenance. And Timken bearings are geometrically designed and precision-made to roll true. Friction is virtually eliminated. They *roll* the loads. We even make our own electric furnace fine alloy steel to be sure it's the finest. We're America's only bearing maker that takes this extra step to control quality.

Timken bearings make machines better. And better machines do better work, give you more for your money. That's Better-ness. Look for its symbol—the trademark "TIMKEN" on the bearings for the machines you build or buy. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.

LEE C. MOORE CORPORATION mounts all sheaves of its JA12242 #7 Cantilever Mast crown block on Timken tapered roller bearings to assure sheave alignment, cut maintenance. Typical bearing mounting is shown in fast line sheave above.

BETTER-ness rolls on **TIMKEN®** tapered roller bearings